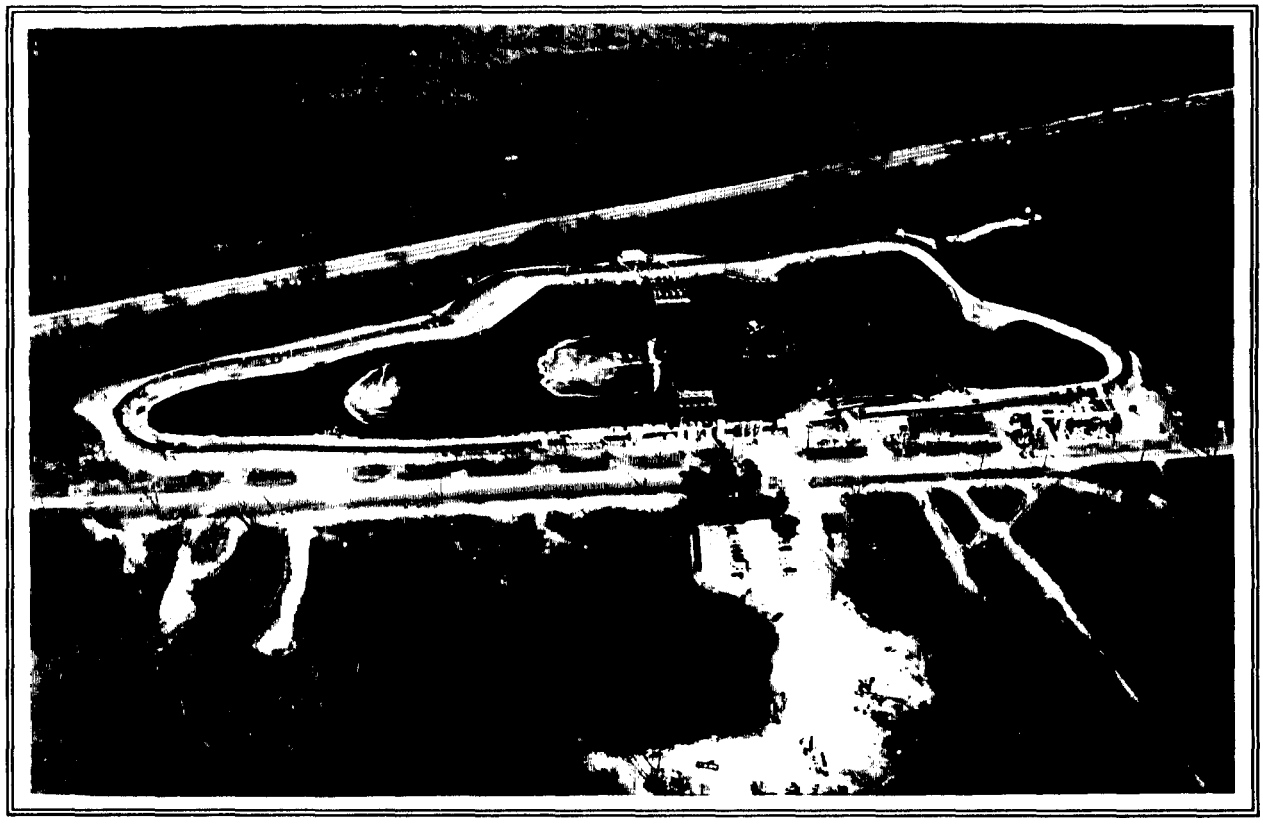
French Ltd. Project

FLTG, Inc.
Crosby, Texas

MONTHLY PROGRESS REPORT



Submitted to:

U.S. Environmental Protection Agency - Region 6
and
Texas Water Commission

February, 1994

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1.0 INTRODUCTION

This report covers the activities of FLTG, Inc. and the French Limited Project for February, 1994. FLTG, Inc. manages the project for the French Limited Task Group of Potentially Responsible Parties.

During February, 1994, the project team focused on the following activities and issues:

- Health, Safety, and Quality
- Safety awareness.
- Contractor safety.
- HAZOP of daily work assignments.
- Correcting work place hazards.
- Response to changing site conditions.
- Safety aspects of dismantling/decontamination/salvage.
- Safe lifting procedures.
- Safe work practices in congested conditions.
- Dismantling/decontamination of south side of the lagoon.
- Treatment of Cell D/F water to meet effluent specifications.
- Backfill Cell E.
- Revise lagoon demobilization plan.

- Operation and maintenance of the aquifer remediation system.
- In-situ aquifer bioremediation.
- DNAPL response options.
- Layout and design INT-11 area containment.
- Water treatment plant operation and maintenance.
- Management of carbon blending system to minimize carbon consumption.
- Water treatment plant sludge handling options.
- Operation of the data base management system.
- Identification and evaluation of potential wetlands sites.

This report includes:

- A summary of February activities, issues, and progress.
- Lagoon Demobilization activities, issues, and progress.
- Groundwater and Subsoil Remediation activities, issues, and progress.
- Groundwater Treatment Plant activities, issues, and progress.
- Ambient Air Management status.
- QA/QC status and data.
- Site management activities, issues, and progress.

2.0 SUMMARY

2.1 Summary of Activities and Progress

2.1.1 Health and Safety

There were no personal injury or equipment damage incidents.

Conducted safety meetings and job inspections at the start of each shift; reviewed safety issues before starting all jobs.

Conducted daily mini-HAZOP of lagoon dismantling/decontamination/salvage.

Supervision made 376 specific on-the-job safety contacts.

Emphasized hand and body pinch points.

All employees and contractors attended daily safety meetings.

Reviewed hazards associated with congested work areas.

Reviewed hazards associated with wet and cold weather.

Reviewed hazards associated with changing conditions.

Reviewed personal protective equipment requirements with all site workers.

Inspected and certified all fire extinguishers.

Inspected all contractor equipment before on-site use.

Inspected all vendor delivery trucks before site entry.

Conducted 25 specific health and safety inspections.

Documented site health and safety inspections; conducted follow-up inspections.

Logged all safety issues each shift; less than 24-hour response to all safety issues.

Continued lottery ticket daily safety awareness incentive program; all regular site employees receive a Texas lottery ticket each day; tickets can be "lost" due to safety violations; employee response has been excellent.

Conducted personnel exposure monitoring, and all results were within acceptable levels. Ths most recent results are in Table 2-1.

Updated employee training records.

2.1.2 Quality/QAQC/Data Base Management

The total quality process was used. The status of the goals is shown on Table 2-2. The safety, health, security, ambient air management, migration control, aquifer remediation, lagoon remediation, analytical cost, and overtime goals were met.

The technical support MH goal was exceeded due to additional pumping and injection wells and design of INT-11 area containment.

Backfill was prevented on 13 days due to wet weather.

Raw data is being validated as per the plan.

The data base management system operated full on-line with no major problems or delays.

All major reports were issued using the new word processing system.

2.1.3 Lagoon Remediation

Dismantling and decontamination of lagoon equipment and systems on the South side of Cell D/F is 90% complete.

Maintained a high level of biological activity in Cell D/F; OUR, HMB, and plate counts are high. Added O_2 to Cell D/F using downdraft aerators.

The Lefco unit treated and discharged about 2.7 million gallons of water; the Lefco unit operated with a minimum of problems.

About 14,100 cubic yards of backfill were placed in Cell E.

Secured equipment and material to stabilize biomass in NE corner of Cell E.

Revised lagoon demobilization plan in response to EPA and TNRCC comments.

Continued on-call schedule and specific procedures to close the west end floodwall access in the event of a flood.

2.1.4 Ambient Air Management

Ambient air quality was manually checked daily with portable analyzers, and no response action was required.

Time-integrated samples were collected in three work areas, and the results indicated no exposure; the data is shown in Table 2-1.

2.1.5 Aquifer Remediation

Monitored status of DNAPL plumes.

DNAPL flow to S1-13 and S1-16 is erratic; S1-12 showed low levels of DNAPL.

Direct drive pump in S1-16 continued to perform well. Plan to install a second direct drive pump on S1-12.

Discussed DNAPL remedial response objectives and criteria with EPA and TNRCC.

Continued to develop and evaluate DNAPL response options.

Agreed to proceed with INT-11 containment wall; developed layout and request for bid.

Continued routine S1 and INT oxygen and nutrient injection; continued to improved the measurement and control of nutrient additions.

Issued weekly well status and performance reports.

Inspected and adjusted all wells each day.

Continued daily maintenance of recovery and injection wells.

Chlorinated 34 production wells to decrease the biomass build up and to increase well flow, and the results were very positive.

Removed silt buildup from 13 wells to increase well flow.

Issued weekly aquifer operating instructions and updated instructions daily.

Developing a plan to replace persistent low-flow wells.

Biomonitoring continued to indicate an active and diverse in-situ biological system.

Started quarterly well measurements and sampling.

Developed a work plan for additional monitoring wells (4), injection wells (7), and production wells (8).

Issued requests for bid for cone penetrometer work and for well installation/development.

Maintained O_2 content of injection water at about 30-40 ppm.

Expanded the pulse pumping area test in sections of the S1 zone South of Gulf Pump Road; the results continue to look positive.

2.1.6 Groundwater Treatment

All discharge criteria were met (see Table 2-3).

The revised discharge criteria were reviewed with EPA and TNRCC; the nickel, selenium, and silver criteria were modified in response to TNRCC comments.

The carbon blending system was off-line.

Options for controlling the carbon blending system are being reviewed.

The carbon absorbers were flushed and recharged on two occasions.

Reviewed sludge handling options and concluded that the sludge could be stabilized in Cell D.

The water treatment plant operated 96% of the time; most of the downtime was due to carbon changes.

The in-line filters on the discharge lines from the bioreactors continue to be effective in removing media pieces.

TOC input to T-101 continued to decrease as the flows from the wells inside the floodwall decreased.

TOC reduction through the Water Treatment Plant has responded to the variations in input TOC; TOC reduction through the bioreactors increased as the biomass diversified.

Biological cultures developed from the lagoon biomass continue to work well in the reactors.

Installed a wet chemistry laboratory in the water treatment plant area.

The process operators collected all the process water and ground water samples.

2.1.7 Wetlands Restoration

Developed wetlands restoration options.

Developing conceptual design and costs for the four potential sites.

Reviewed site evaluation process and results with agency review committee.

Conducted site tour of four potential sites; the agencies agreed that acceptable wetlands could be generated at all four of the remaining sites.

Eliminated two sites and are concentrating effort on two high potential sites.

Developed archeological, hydrology, and civil work plans for the two sites.

2.1.8 Site Management and Issues

Used the on-site laboratory to process all the operational control samples.

Reviewed lagoon and aquifer progress and plans in detail with EPA and TWC on a regular basis.

Continued equipment salvage and sales.

Reviewed project status and issues each day to ensure focus on critical issues - safety, quality and cost.

Issued weekly cost, schedule, and maintenance reports.

Reviewed progress on issues and action plans each week.

Reduced technical support MH's.

Tested the flood gate on one occasion.

Decided not to purchase the Murphy property.

Final results on fish tissue samples from the North fishing hole and from Riverdale lake are pending.

TABLE 2-1

Ambient Air Management
Time Integrated Exposure Data

Compound	PEL 8 hour PPM	M01D0037 15-Feb-94 Inside Wall		M01D0037 15-Feb-94 Outside Wall	
		% of PEL	PPM	% of PEL	PPM
Chloromethane	50	0.000	0.000	0.000	0.000
Bromomethane	5	0.000	0.000	0.000	0.000
Vinyl chloride	1	0.000	0.000	0.000	0.000
Chloroethane	1000	0.000	0.000	0.000	0.000
Dichloromethane	50	0.000	0.000	0.003	0.002
Acetone	750	0.002	0.017	0.000	0.000
Carbon disulfide	10	0.000	0.000	0.006	0.001
1,1-Dichloroethene	5	0.000	0.000	0.000	0.000
1,1-Dichloroethane	100	0.000	0.000	0.002	0.002
trans-1,2-Dichloroethene	200	0.000	0.000	0.001	0.003
Chloroform	10	0.027	0.003	0.345	0.035
1,2-Dichloroethane	10	0.017	0.002	0.089	0.009
2-Butanone	200	0.034	0.068	0.000	0.000
1,1,1-Trichloroethane	350	0.000	0.001	0.000	0.001
Carbon Tetrachloride	5	0.012	0.001	0.080	0.004
Vinyl acetate	10	0.000	0.000	0.000	0.000
Bromodichloromethane			0.000		0.000
1,2-Dichloropropane	75	0.001	0.001	0.000	0.000
cis-1,3-Dichloropropene	1	0.000	0.000	0.000	0.000
Trichloroethene	50	0.000	0.000	0.007	0.003
Dibromochloromethane			0.000		0.000
1,1,2-Trichloroethane	10	0.000	0.000	0.000	0.000
Benzene	1	0.227	0.002	0.418	0.004
trans-1,3-Dichloropropen	1	0.000	0.000	0.000	0.000
2-Chloroethylvinyl ether			0.000		0.000
Bromoform	0.5	0.000	0.000	0.000	0.000
4-Methyl-2-pentanone	50	0.000	0.000	0.000	0.000
2-Hexanone	5	0.000	0.000	0.000	0.000
Tetrachloroethene	50	0.000	0.000	0.008	0.004
1,1,2,2-Tetrachloroethane	1	0.000	0.000	0.000	0.000
Toluene	100	0.003	0.003	0.013	0.013
Chlorobenzene	10	0.000	0.000	0.000	0.000
Ethylbenzene	100	0.000	0.000	0.002	0.002
Styrene	50	0.000	0.000	0.000	0.000
Xylene (total)	100	0.000	0.000	0.012	0.012
Hexane			0.003		0.043

TABLE 2-2

Project Quality

Status as of 2/28/94	Goals		
Yes	1)	No OSHA recordable injuries.	
Attention	2)	100% compliance with all safety rules and procedures.	
Yes	3)	No citations for violations of applicable, relevant and appropriate regulations.	
Yes	4)	100% attendance (including subcontractors) at daily safety meetings.	
Attention	5)	Less than 24-hour response time on health and safety issues.	
Yes	6)	100% sign-in and security clearance.	
Yes	7)	No invalidation of reported data due to QA/QC issues.	
	8)	Spend less than:	MH/Month
Yes		• Direct hire	3,000
Yes		• FLTG management (5 people)	700
Action		• Technical support (5 people)	900
Yes		• Maintenance support	120
Attention	9)	Pump at least 140 gpm; inject at least 100 gpm.	
Attention	10)	Remediate shallow alluvial zone aquifer in 60 months.	
Action	11)	Pump and treat 3.8 million gallons of lagoon water per month.	
Action	12)	Place 30,000 yds.^{3} of fill in the lagoon per month.	
Yes	13)	Hold analytical cost to less than $20,000 per month (1994 only).	
Yes	14)	No unscheduled overtime (per day or per week).	
Yes	15)	No agency contacts which require 3rd party resolution.	
Yes	16)	Documented training of site personnel for all work assignments.	
Yes	17)	Weekly audit of actual performance versus goals.	

TABLE 2-3

Treated Water Results Summary

Collected	Set #	pH	TSS	TOC	O & G	Benzene	Chlor HC's	Tot PCB's	Naphthalene
Parameter		pH	TSS	TOC	O & G	Benzene	Chlor HC's	Tot PCB's	Naphthalene
Grab Limit		6 to 9	5 PPM	55 PPM	15 PPM	150 PPB	500 PPB	0.65 PPB	300 PPB
Comp Limi		6 to 9	5 PPM	55 PPM	15 PPM	150 PPB	500 PPB	0.50 PPB	300 PPB
10/04/93	M03A0172	7.43	<2	4.4	<5.6	<5	<100	<0.25	<10
10/07/93	M03A0173	7.9	<2	<1	<10	<5	<100	<0.25	<10
10/11/93	M03A0174	8.14	<2.1	3.2	<5.6	<5	<100	<0.25	<10
10/14/93	M03A0175	7.95	2.4	<1	<5.6	<5	<100	<0.25	<10
10/18/93	M03A0176	7.6	<2	<1	<5.6	<5	<100	<0.25	<10
10/21/93	M03A0177	7.76	<2	2.9	<5.6	<5	<100	<0.25	<10
10/25/93	M03A0178	7.48	2	13	<5.5	<5	<100	<0.25	<10
10/28/93	M03A0179	8.31	2.1	<1	<5.9	<5	<100	<0.25	<10
11/01/93	M03A0180	8.21	4	2	<5.6	<5	<100	<0.25	<10
11/04/93	M03A0181	8.07	2	1.3	<5.6	<5	<100	<0.25	<10
11/08/93	M03A0182	8	2	4.5	<5.6	<5	<100	<0.25	<10
11/11/93	M03A0183	7.84	<2	<1	<5.6	<5	<100	<0.25	<10
11/15/93	M03A0184	8.08	<2.1	<1	<5.6	<5	<100	<0.5	<10
11/18/93	M03A0185	7.74	<2	<1	<5.6	<5	<100	<0.25	<10
11/22/93	M03A0186	7.77	<2	<1	<5.1	<5	<100	<0.25	<10
11/25/93	M03A0187	7.62	2	<1	<5.6	<5	<100	<0.25	<10
11/29/93	M03A0188	7.47	2	12	<5.6	<5	8	<0.25	<10
12/02/93	M03A0189	7.64	<2	10	<5.5	<5	14	<0.25	<10
12/06/93	M03A0190	7.99	<2	<1	<5.3	<5	4	<0.5	<10
12/09/93	M03A0191	7.63	<2	5.1	<5.3	<5	8	<0.25	<10
12/13/93	M03A0192	7.5	2	13.3	<5.3	<5	4	<0.5	<10
12/16/93	M03A0193	7.58	2	15	<5.3	<5	<100	<0.25	<10
12/20/93	M03A0194	8.13	<2.2	1.4	<5.3	<5	<100	<0.25	<10
12/23/93	M03A0195	7.82	<2	1.8	<5.9	<5	<100	<0.25	<10
12/27/93	M03A0196	7.63	<2	6.7	<5.3	<5	<100	<0.25	<10
12/31/93	M03A0197	7.98	<2.2	<1	<5.6	<5	<100	<0.25	<10
01/03/94	M03A0198	7.8	<2	4.7	<5.6	<5	<100	<0.25	<10
01/06/94	M03A0199	7.78	<2	<1	<5.3	<5	<100	<0.25	<10
01/10/94	M03A0200	8.21	2	4.2	<5.3	<5	<100	<0.25	<10
01/13/94	M03A0201	8.17	4	7.9	<5.6	<5	<100	<0.25	<10
01/17/94	M03A0203	7.79	<2.1	9	<5.4	<5	8	<0.25	<10
01/20/94	M03A0202	7.75	<2	6.1	<5.4	<5	8	<0.25	<10
01/24/94	M03A0204	7.6	2	12	<5.4	<5	19	<0.25	<10
01/27/94	M03A0205	7.5	<2	11	<5.4	<5	16	<0.25	<10
01/31/94	M03A0206	8.02	2.1	6.2	<5.6	<5	<100	<0.25	<10
02/03/94	M03A0207	7.6	<2	3.8	<5.6	<5	26	<0.25	<10
02/07/94	M03A0208	7.57	<2.2	12	<5.3	<5	19	<0.25	<10
02/10/94	M03A0209	7.98	2	9.7	<5.6	<5	45	<0.25	<10
02/14/94	M03A0210	8.04	<2	3.8	<5.6	<5	37	<0.25	<10
02/17/94	M03A0211	7.87	2	4.2	<5.3	<5	15	<0.25	<10
02/21/94	M03A0212	7.53	<2	8.6	<5.3	<5	21	<0.25	<10
02/24/94	M03A0213	8.14	2.2	4	<5.6	<5	19	<0.25	<10
02/28/94	M03A0214								

Chlor HC's value is sum of 21 Chlorinated HC's in 8240 TC list. Metals values in PPM.

TABLE 2-3 (Continued)

Treated Water Results Summary

As	Ba	Cd	Cr	Cu	Pb	Mn	Hg	Ni	Se	Ag	Zn
300	400	152	5000	15	133	3000	2	313	300	8	325
200	2000	72	1000	10	63	2000	2	148	200	4	154
21.2	22.9	<3	<4	<3	<28	<30.4	<0.2	<20	<3	<3	7
35.7	21.4	<3	<4	<3	<28	22.1	<0.2	<20	<3	<3	7.9
23.4	13.5	<3	<4	<3	<28	10.5	<0.2	<20	<3	<3	18.1
25	21.6	<4	<6	<4	<34	8.6	<0.2	<15	<3	<4	8.2
26.3	22.8	<4	<6	4.8	<34	6.2	<0.2	<15	3	<4	14.1
23.7	17.1	<4	<6	<4	<34	8	<0.2	19.8	<3	<4	11.9
13	15.2	<4	<6	<4	<34	6.6	<0.2	24.3	<3	<4	19
19	18.4	<4	<6	<4	<34	4.7	<0.2	<15	<3	<4	6.7
45.8	24.6	<4	<6	<4	<34	4.9	<0.2	<15	<3	<4	4.4
24.5	23.4	<4	<6	<4	<34	2.8	<0.2	<15	2.3	<4	13
26	23.1	<4	<6	4.2	<34	2.5	<0.2	<15	<3	<4	12.3
24.8	21.6	<4	<6	4.3	<34	1.1	<0.2	20.5	<3	<4	15.3
35.9	22	<4	<6	7	<34	8.2	<0.2	<15	<3	<4	10.3
24.6	21.4	<4	<6	<4	<34	3.6	<0.2	<15	<3	<4	25.4
17.8	19.7	<4	<6	<4	<34	7.2	<0.2	<15	<3	<4	18.4
18.9	16.7	<4	<6	<4	<34	9.5	<0.2	<15	<3	<4	26.2
12.6	13.8	<4	<6	<4	<34	13.7	<0.2	23.8	<3	<4	20.1
13.4	8.3	<4	<6	4.7	<34	9.3	<0.2	<15	<3	<4	25
11.9	18	<4	<6	<4	<34	24.4	<0.2	<15	<3	<4	16
9.6	17.6	<4	<6	<4	<34	19.3	<0.2	<15	<3	<4	12.4
7.6	15	<4	<6	<4	<34	19	<0.2	<15	<3	<4	7.6
14.2	20.5	<4	<6	<4	<34	22.7	<0.2	<15	<3	<4	12
14	5.7	<4	<6	<4	<34	4.5	<0.2	<15	<3	<4	17.8
11.1	14	<4	<6	<4	<34	12.6	<0.2	<15	3.5	<4	19.9
12.8	19.3	<4	<6	<4	<34	15.3	<0.2	<15	3.2	<4	22.5
20.7	22.3	<4	<6	<4	<34	17.1	<0.2	<15	3.5	<4	13.6
9.7	18.7	<4	<6	<4	<34	17.5	<0.2	<15	<3	<4	13.5
17.3	17	<4	<6	<4	<34	21.3	<0.2	<15	<3	<4	17.6
15.9	13.3	<4	<6	<4	<34	13.8	<0.2	<15	<3	<4	23
10.8	8.8	<5	<4	<5	<41	12.3	<0.2	<19	3.4	<4	27.9
7.4	15.3	<5	<4	<5	<41	15.2	<0.2	<19	<3	<4	21.2
10.9	12.1	<5	<4	<5	<41	14.8	<0.2	<19	<3	<4	15.6
10	13.2	<5	<4	<5	<41	22.9	<0.2	<19	<3	<4	24.4
11.2	10	<5	<7	<5	<41	24	<0.2	<19	<3	<4	30
17.6	12	<5	<7	<5	<41	17	<0.2	<19	<3	<4	32
11.8	16.4	<5	<7	<5	<41	22.5	<0.2	<19	<1	<4	28.2
9.9	17.1	<5	<4	<5	<41	25.7	<0.2	<19	<3	<3	19
9.3	11.6	<5	<4	<5	<41	11.6	<0.2	<19	<3	<3	18.4
8.7	9.8	<5	<4	<5	<41	9.1	<0.2	<19	<3	<3	12.8
13.4	10.1	<5	<4	<5	<41	24.1	<0 2	<19	<3	<3	11 2
11.1	19.4	<5	<4	<5	<41	24.6	<0 2	22	<3	<3	24 8
12.1	8.8	<5	<4	<5	<41	5	<0.2	<19	<3	<3	20.2

2.2 Problem Areas and Recommended Solutions

Problem	Solution
Maintain high level of safety awareness.	Continue daily lottery ticket program. Daily safety meetings. Supervisory safety contacts.
On-the-Job safety attention.	Contact all employees at least twice per day on safety issues. Review job details as work proceeds.
Changing conditions.	Review status and conditions daily and any time conditions change.
Congested work areas.	Closely coordinate work assignments.
DNAPL migration in S1-16 and S1-13 area.	Maintain active pumping in S1-16 and S1-13 area to control DNAPL gradient.
Response action plan for DNAPL and DNAPL affected areas.	Complete RIFS and develop response action plan. Install containment wall around INT-11 area.
DNAPL in S1-12.	Install direct drive pump.
Large number of technical support MH's.	Train operators to collect routine operating data; reduce sample frequency to practical level; perform data entry in-house. Develop reports in-house. Complete refinement designs in-house.
Keystone response time is too slow.	Emphasize response action plan; rebid site analytical requirements.

Slow Cell E backfill rate.	Increase the number of trucks from three to six; increase days per week from five to six.
Stabilize biomass sludge in NE corner of Cell E.	Use trackhoe mixer and pebble lime to stabilize biomass sludge.
Measurement of biological activity in the aquifer.	Measure plate count, OUR, and HMB monthly. Results show high level of biological activity in aquifer. Coupon measurements confirm activity.
Cell D/F water treatment.	Allow settling time in the lagoon; run test volumes through water treatment plant.
INT zone groundwater sample results indicate plume migration to southwest.	Developed plan to install 12 new INT wells.
Aquifer compliance criteria.	Continued discussions of approaches.
Non-uniform distribution of nutrients in INT zone.	Operate 39 injection wells.
Rebound of chemicals in S1 zone on west end.	Continued pulse pumping test in this zone.
Wetlands site selection.	Developed short list of two acceptable sites.

2.3 Problems Resolved

Problem	Solution
Expedite bioremedation in INT-11 area.	Install containment wall around DNAPL in INT-11 area.
Expedite bioremediation in INT zone to SW.	Install 12 additional INT wells.
Treated water effluent criteria.	Responded to TNRCC requirements.
Property acquisition for wetlands restoration.	Selected sites already owned by governmental agency.
Long term handling of water treatment plant sludge.	Pump to Cell D and stabilize.

2.4 Deliverables Submitted

1993 Well Installation Report.

Interim wetlands site evaluation report.

INT zone well installation work plan.

January, 1994 Monthly Report.

Sikes backfill source sampling plan.

2.5 Upcoming/Ongoing Events and Activities

Daily safety meetings and inspections.

Lottery ticket safety awareness program.

Respond to HAZOP audits.

Redevelop low flow injection wells.

Daily well pump checks and maintenance.

Chlorinate low flow pumping wells.

Add INT monitoring wells, production wells, and injection wells in the landfill area.

Add S1 production wells and injection wells in S1-16 and S1-13 areas.

Dismantle and decontaminate lagoon equipment.

Test securing west end floodwall access.

Continue dewater and backfill of Cell E.

Reduce Cell E backfill level by three feet.

Stabilize biomass sludge in NE corner of Cell E.

Operate Data Base Management System.

Decontaminate scrap steel and pipe and put in the bottom of Cell E.

Total Quality process.

Continue rebound test for S1 wells South of Gulf Pump Road.

Continue biological activity monitoring in S1 wells and INT wells.

Install new S1 pumping wells and injection wells in S1-16 area and S1-13 area.

Define extent of affected groundwater to the SW.

Install additional INT monitoring wells, production wells, and injection wells in SW area.

Develop DNAPL response plan and aquifer compliance criteria.

Develop INT-11 containment wall design and request for bid.

Continue QA/QC data confirmation.

Strengthen biomass in Water Treatment Plant.

Issue request for bid to construct water collection and handling system.

Optimize carbon usage in Water Treatment Plant.

Continue wetlands restoration project.

2.6 Key Staffing Changes

Ron Jansen to handle QAQC validation, replacing Don Flory.

2.7 Percent Complete

Research & Development	- 97%
Facilities	- 100%
Slough	- 100%
Subsoil Investigation	- 100%
Floodwall	- 100%
Lagoon Remediation	- 100%
Groundwater	- 47%
Lagoon Dewatering/Fixation	- 45%
Water Treatment	- 43%
Wetlands	- 23%
Demobilization	- 30%
Monitoring	- 36%

2.8 Schedule

All deliverables are on schedule.

Complete active aquifer remediation by January 1, 1996.

2.9 Operations and Air Monitoring Data

The operations and monitoring data are submitted as parts of Sections 3.0, 4.0, 5.0, and 6.0 of this report and are stored in secure storage at the French project office.

2.10 Credits Accrued/Applied

Status of Credits

	Accrued this period	Accrued to date	Applied this period	Applied to date	Running total
December 1990	34	34	0	0	34
January 1991	28	62	0	0	62
February 1991	6	68	0	0	68
March 1991	0	68	0	0	68
April 1991	22	90	0	0	90
May 1991	3	93	0	0	93
June 1991	6	99	0	0	99
July 1991	1	100	0	0	100
August 1991	0	100	0	0	100
September 1991	0	100	0	0	100
October 1991	0	100	0	0	100
November 1991	0	100	0	0	100
December 1991	0	100	0	0	100
January 1992	0	100	2	2	98
February 1992	0	100	0	2	98
March 1992	0	100	0	2	98
April 1992	1	101	0	2	99
May 1992	0	101	0	2	99
June 1992	0	101	0	2	99
July 1992	0	101	0	2	99
August 1992	0	101	0	2	99
September 1992	0	101	0	2	99
October 1992	0	101	0	2	99
November 1992	0	101	0	2	99
December 1992	0	101	0	2	99
January 1993	0	101	0	2	99
February 1993	0	101	0	2	99
March 1993	0	101	0	2	99
April 1993	0	101	0	2	99
May 1993	0	101	0	2	99
June 1993	0	101	0	2	99
July 1993	0	101	2	4	97
August 1993	2	103	0	4	99
September 1993	0	103	0	4	99
October 1993	0	103	0	4	99
November 1993	1	104	0	4	100
December 1993	0	104	0	4	100
January 1994	0	104	0	4	100
February 1994	0	104	0	4	100

2.11 Community Relations

Maintained 24-hour, call-in Hot Line.

Conducted five site tours for interested parties.

Reviewed site status with Baytown City Council.

Contacted nearby local residents with update on site operation.

Contacted several Riverdale residents with site status report.

3.0 LAGOON BIOREMEDIATION

3.1 Summary of Activities

Continued to dewater and backfill Cell E; located the residual biomass sludge to the SW corner of Cell E; started stabilization of this material with pebble lime. Started to establish interim final grade in Cell E of about 0.5% downslope from the South side to the North side.

Continued to dismantle and decontaminate equipment and facilities in Cell D/F; the demobilization of Cell D/F is 90% complete.

3.2 Problems and Response Action

There were no problems and response actions in February.

3.3 Problems Resolved

Equipment and materials were secured to stabilize the biomass sludge in Cell E.

Equipment was ordered to install the Cell D/F wall to isolate the water treatment plant bio sludge.

3.4 Deliverables Submitted

Sikes backfill source sampling plan.

3.5 Upcoming Events and Activities

Maintain pH, DO, OUR, and nutrient levels in Cell D/F; operate aerator/mixer in Cell D/F. Continue dismantling and salvage of Cell D/F equipment and facilities. Continue to dewater and backfill Cell E. Stabilize biomass sludge in Cell E.

4.0 GROUNDWATER AND SUBSOIL REMEDIATION

4.1 Summary of Activities

4.1.1 Operation of Production and Injection Well Systems

4.1.1.1 Production Well System

During February 1994 (reporting period January 28 - February 27), 97 out of 99 wells in the groundwater production well system were operational. One well (INT-65) was converted from injection to production. Wells S1-35 and S1-43 have been taken off line since they did not show bounceback effects in the three-month S1 unit bounceback study. Wells S1-23, -33, -34, -36, 37, -38, and -42 operated in pulse pumping mode. Table 4-1 and Figure 4-1 summarize flows from the production well system. All operating production wells except S1-16 were individually metered. Well S1-16 continued to operate via a DNAPL separator tank.

Highlights of production well system performance in February:

- A total of 7.3 million gallons of groundwater was pumped from the production well system. The cumulative total groundwater pumpage to date is approximately 161.4 million gallons.
- The combined pumping rate from the S1 and INT units ranged from 82 to 202 gpm and averaged 164 gpm.
- Total production was divided between the S1 and INT units in the ratio 70:30, and between north and south of Gulf Pump Road in the ratio 55:45.
- The total pumping rate from the S1 unit averaged 115 gpm; the pumping rate from each of 46 operating S1 production wells averaged 2.5 gpm/well.
- The total pumping rate from the INT unit averaged 49 gpm; the pumping rate from each of 50 INT production wells averaged 1.0 gpm/well.
- Daily average non-volatile total organic carbon (TOC) concentration in produced groundwater ranged from 28 to 314 mg/L and averaged 163 mg/L.
- 4,430 kg (9,750 lbs) of non-volatile organic carbon was removed from the S1 and INT units by groundwater pumping. Approximately 141,580 kg (311,480 lbs) of non-volatile organic carbon has been removed to date.

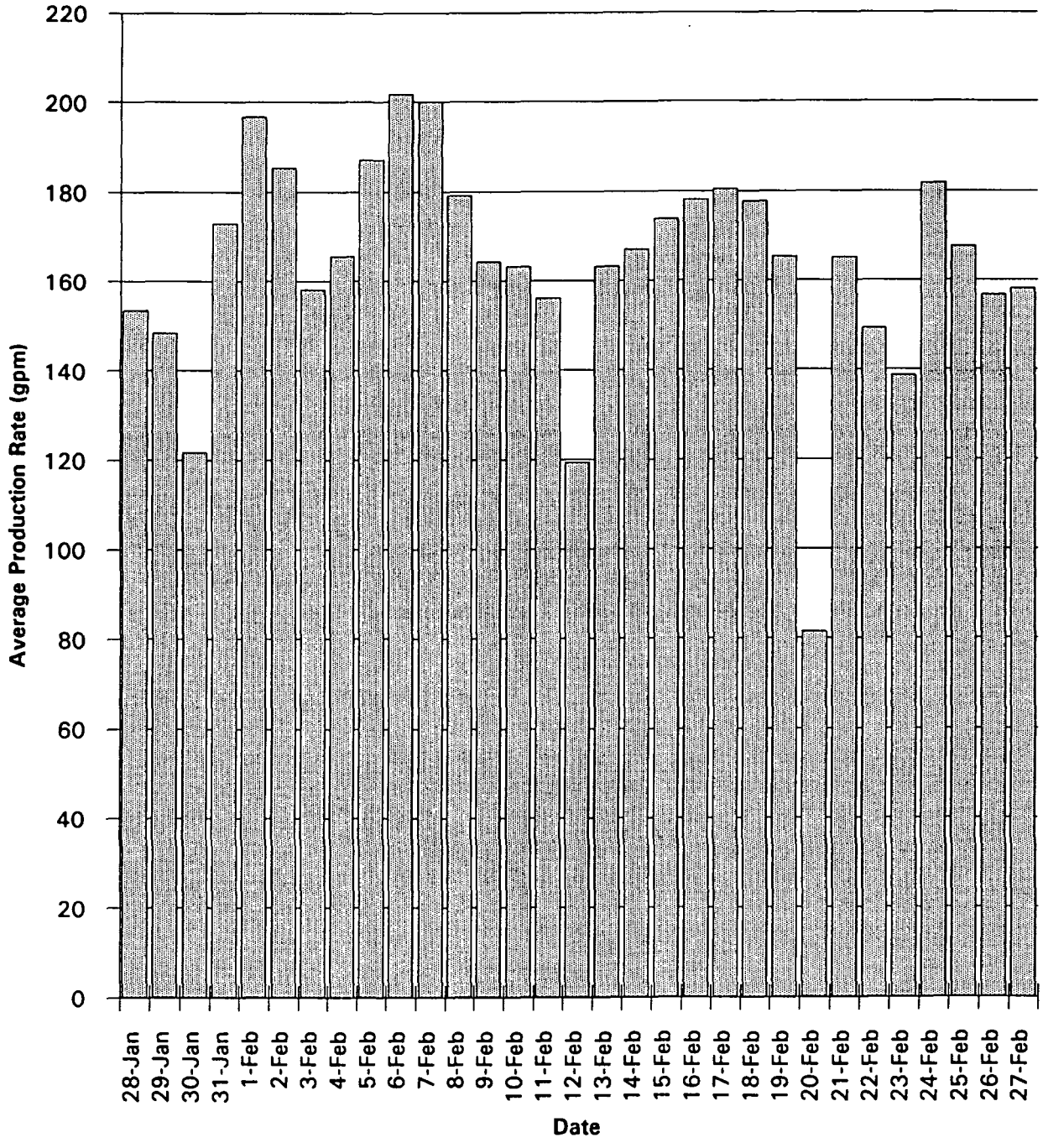
Table 4-1

Daily Flows, TOC Concentrations and TOC Loadings
February, 1994

Date	Project Day	North of Gulf Pump Road (FQ-901)	South of Gulf Pump Road (FQ-902)	T101 Inflow Rate (901+902)	T-101 Outflow Rate (FQ-101A)	T-101 Outflow Rate	T-101 Influent Ave. TOC	T-101 Influent TOC Loading
		(gpd)	(gpd)	(gpd)	(gpd)	(gpm)	(mg/L)	(kg/day)
28-Jan	751	170,700	111,300	282,000	221,000	153	234	196
29-Jan	752	145,800	99,900	245,700	213,800	148	218	176
30-Jan	753	150,400	100,800	251,200	175,200	122	218	145
31-Jan	754	177,000	151,600	328,600	249,000	173	141	133
1-Feb	755	171,400	190,700	362,100	283,200	197	57	61
2-Feb	756	156,800	173,300	330,100	266,900	185	179	181
3-Feb	757	136,500	154,900	291,400	227,600	158	209	180
4-Feb	758	189,500	180,200	369,700	238,400	166	238	214
5-Feb	759	182,200	186,500	368,700	269,500	187	163	166
6-Feb	760	174,200	179,100	353,300	290,500	202	179	197
7-Feb	761	173,700	146,700	320,400	288,100	200	156	170
8-Feb	762	173,500	102,000	275,500	258,000	179	190	186
9-Feb	763	178,400	92,800	271,200	236,500	164	314	281
10-Feb	764	175,600	87,400	263,000	235,100	163	240	213
11-Feb	765	181,100	99,300	280,400	224,700	156	141	120
12-Feb	766	171,900	59,600	231,500	171,900	119	295	192
13-Feb	767	168,700	46,200	214,900	235,000	163	243	216
14-Feb	768	158,100	128,100	286,200	240,600	167	137	124
15-Feb	769	176,200	130,000	306,200	250,100	174	55	52
16-Feb	770	164,500	154,100	318,600	256,300	178	28	27
17-Feb	771	165,000	161,400	326,400	259,900	180	92	90
18-Feb	772	118,200	155,500	273,700	255,900	178	87	84
19-Feb	773	128,400	156,400	284,800	238,200	165	127	114
20-Feb	774	117,400	153,300	270,700	117,400	82	127	56
21-Feb	775	175,900	140,000	315,900	237,800	165	153	138
22-Feb	776	170,700	135,000	305,700	215,000	149	195	159
23-Feb	777	162,500	137,000	299,500	199,700	139	101	77
24-Feb	778	164,600	138,900	303,500	261,800	182	92	92
25-Feb	779	174,700	145,800	320,500	241,400	168	152	139
26-Feb	780	174,000	145,000	319,000	225,600	157	120	102
27-Feb	781	160,200	149,100	309,300	227,600	158	177	153
Month Average		164,123	135,223	299,345	235,861	164	163	143
Month Total		5,087,800	4,191,900	9,279,700	7,311,700			4,432
Project Average		170,707	125,568	296,275	206,683	139	260	181
Project Total		132,144,626	98,068,407	231,390,711	161,419,056			141,578

Figure 4-1

Groundwater Production Rate



4.1.1.2 Injection Well System

During February, the operating injection well system consisted of 11 S1 wells and 36 INT wells. All injection wells were operational. As noted above, injection well INT-65 was converted to a production well in early February. Table 4-2 and Figure 4-2 summarize daily flows into the injection well system.

Oxygen- and potassium nitrate-amended potable water was injected to the INT unit at a target dissolved oxygen concentration of 40 mg/l and a target nitrate concentration of 50 mg/l-N. Oxygen-amended potable water was injected to the S1 unit at a target dissolved oxygen concentration of 40 mg/l. As a check on potassium nitrate and oxygen delivery to injection wells, samples were collected for potassium and nitrate analysis (see Section 4.1.3) at twelve selected points, adjacent to operating injection wells, on the INT injection well header system, and dissolved oxygen (DO) measurements were made (see Section 4.2.3) at all operating injection wells.

From approximately February 16 onward, treated water from the groundwater treatment plant has been used to supplement potable injection water. Approximately 25% of injected water is now treated water.

Highlights of injection well system performance in February:

- A total of 4.2 million gallons of groundwater was injected into the S1 and INT units. The cumulative total groundwater injection to date is approximately 73.2 million gallons.

- The combined injection rate into the S1 and INT units varied between 85 and 112 gpm. The average combined injection rate was 95 gpm.

- Injection into the S1 unit was approximately 1.3 million gallons for a total injection to date of 43.7 million gallons.

- Injection into the INT unit was approximately 2.9 million gallons for a total injection to date of 29.5 million gallons.

- The average groundwater injection rate into the S1 unit in February was 39 gpm; injection to individual operating wells averaged 3.5 gpm. (Note: average rates are prorated from main flow meter readings based on individual well flow meter readings).

- The average groundwater injection rate into the INT unit in February was 56 gpm; injection to individual operating wells averaged 1.6 gpm.

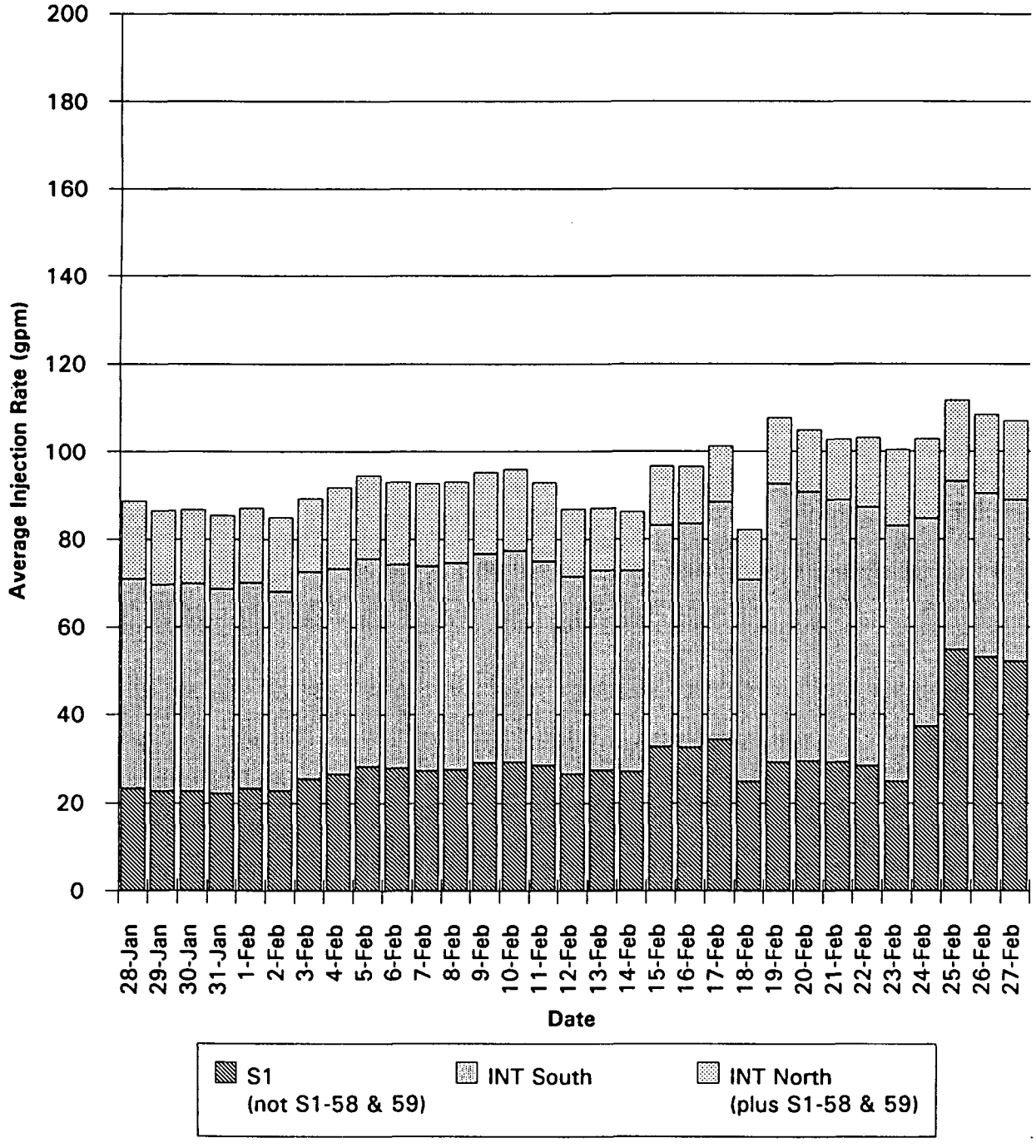
Table 4-2

Daily Injection Flows
S1 and INT Injection Well Systems
February, 1994

Date	Project Day	S1 Injection Wells (905-909)		INT North Injection Wells Meter FQ-906		INT South Injection Wells Meter FQ-909		Total Injection Rate	
		(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)
28-Jan	751	33,500	23	25,500	18	68,700	48	127,700	89
29-Jan	752	32,600	23	24,400	17	67,600	47	124,600	87
30-Jan	753	32,500	23	24,400	17	68,100	47	125,000	87
31-Jan	754	31,800	22	24,200	17	67,100	47	123,100	85
1-Feb	755	33,400	23	24,500	17	67,600	47	125,500	87
2-Feb	756	32,700	23	24,300	17	65,300	45	122,300	85
3-Feb	757	36,500	25	24,100	17	68,000	47	128,600	89
4-Feb	758	38,100	26	26,800	19	67,300	47	132,200	92
5-Feb	759	40,600	28	27,300	19	68,200	47	136,100	95
6-Feb	760	40,000	28	27,200	19	66,900	46	134,100	93
7-Feb	761	39,200	27	27,200	19	67,100	47	133,500	93
8-Feb	762	39,600	28	26,800	19	67,700	47	134,100	93
9-Feb	763	41,800	29	26,900	19	68,500	48	137,200	95
10-Feb	764	42,000	29	26,800	19	69,400	48	138,200	96
11-Feb	765	40,900	28	25,800	18	67,100	47	133,800	93
12-Feb	766	38,200	27	22,200	15	64,700	45	125,100	87
13-Feb	767	39,300	27	20,500	14	65,700	46	125,500	87
14-Feb	768	38,800	27	19,600	14	65,900	46	124,300	86
15-Feb	769	47,100	33	19,400	13	72,700	50	139,200	97
16-Feb	770	46,900	33	18,900	13	73,300	51	139,100	97
17-Feb	771	49,500	34	18,600	13	77,800	54	145,900	101
18-Feb	772	35,700	25	16,400	11	66,200	46	118,300	82
19-Feb	773	42,000	29	21,900	15	91,300	63	155,200	108
20-Feb	774	42,400	29	20,600	14	88,300	61	151,300	105
21-Feb	775	42,000	29	20,000	14	86,100	60	148,100	103
22-Feb	776	40,800	28	23,000	16	84,800	59	148,600	103
23-Feb	777	35,700	25	25,000	17	83,900	58	144,600	100
24-Feb	778	53,700	37	26,300	18	68,300	47	148,300	103
25-Feb	779	78,900	55	26,800	19	55,300	38	161,000	112
26-Feb	780	76,500	53	26,100	18	53,700	37	156,300	109
27-Feb	781	75,000	52	26,100	18	53,100	37	154,200	107
Month Average		43,152	30	23,794	17	69,861	49	136,806	95
Month Total		1,337,700		737,600		2,165,700		4,241,000	
Project Average		36,051	25	32,976	23	69,671	48	106,981	74
Project Total		1,982,800		22,555,628		3,831,900		73,175,121	

Figure 4-2

Groundwater Injection Rate



- The average DO concentration in injected water was 25.6 ppm for the S1 unit and 32.3 ppm for the INT unit.

- A total of 14,100 gallons of 4.7% w/w potassium nitrate nutrient solution was added to the INT unit for an average nutrient flow rate of 456 gpd or 0.49% of the overall inflow rate. At this rate, the calculated injected nitrate concentration was 33 mg/l-N.

4.1.2 Operational Monitoring

Operational monitoring associated with the groundwater remediation system during February 1994 consisted primarily of the following activities:

- Daily production and injection well checks for pump, meter, and level control operation, injection pressure, gas buildup, and flow meter readings.

- Weekly nutrient sampling at twelve INT injection wells. Four wells are sampled per week on a three-week schedule, so that a complete survey of the injection system is performed every three weeks.

- Weekly dissolved oxygen readings at all injection wells.

- Daily readings (at shift changes) of groundwater treatment plant inflow and outflow meters; nutrient injection flow meters; oxygen flows, pressure and temperature; and injection header back pressure.

- Daily rainfall monitoring.

- Daily measurement (at shift changes) of T-101 influent and effluent TOC concentrations.

- Monthly sampling of T-101 influent for TCL VOC, TOC, and nutrient analysis, (1) from all operating production wells, and (2) from all wells located outside the floodwall; this data is used to develop the chemical mass balance for the groundwater remediation system.

- Monthly groundwater water level monitoring at all monitoring wells, used to prepare S1 and INT unit water level maps.

- Monthly in-situ DO monitoring at all monitoring wells, used to prepare S1 and INT unit DO maps.

- Monthly groundwater sampling from all production wells for on-site TOC analysis, used to prepare S1 and INT unit TOC concentration maps.

The annual groundwater monitoring event, in which 88 wells were sampled, and 23 sample splits were collected by EPA, was started on December 13, and was completed on January 5, 1994. Sampling procedures followed previous quarterly sampling events. Results continued to be received from the lab during February but were not complete by the end of the reporting period.

4.1.3 In-Situ Bioremediation

During February, both S1 and INT injection headers received oxygenated potable water. Potassium nitrate (nutrient and alternate electron acceptor) was added to INT injection headers only.

Potassium nitrate injection rates to the INT unit during February averaged 0.49% of the potable water inflow rate, which will result in injection of potable water with 33 mg/l NO_3-N nitrate. This compensates for the January period, when nutrient injection rates averaged 0.94%, resulting in injection water at 63 mg-L NO_3-N.

The average DO concentration in injected water in February increased from 24.9 to 25.6 ppm for the S1 unit and from 28.5 to 32.3 ppm for the INT unit, following an increase in oxygen flow rates on January 22.

4.1.4 Data Management and Evaluation

All monitoring and operational data associated with the French Limited groundwater and subsoil remediation during this reporting period were entered into the FLTG database. Tables and data manipulation for this section of the Monthly Progress Report were generated from this database.

4.2 Problems and Response Actions

4.2.1 Production System Capacity

The target rate for groundwater production is 140 gpm. The production rate during February was above target at 164 gpm. Increased production rates are attributed to the chlorination program which was started in January. Due to the success of this program in maintaining higher flow rates, it is now performed routinely. Wells to be chlorinated are selected based on visible biofouling (observed during routine well checks) or decreased flow rates.

4.2.2 Injection System Capacity

The target rate for groundwater injection is 100 gpm. The average injection rate during February was 95 gpm, up from 80 gpm in January and 72.5 gpm in December. The increase can be attributed to an increase in injection pressure rates in January.

4.2.3 Nutrient and Oxygen Injection Systems

Nutrient concentrations in injection water were below target levels, and dissolved oxygen concentrations were below target levels, during February. Further adjustments of flow rates are required to maintain these concentrations at or near target levels.

4.3 Pending Issues

4.3.1 DNAPL Study

The Draft Evaluation of Alternatives and Feasibility Study Report was submitted to FLTG in mid-December and revised in January. Further revision took place in February, and is scheduled for completion in March.

4.3.2 Western Area Well Installation

Initial results from the baseline sampling of the nine new S1 and INT monitoring wells, installed in the landfill area in December confirmed that an elongate VOC plume, aligned approximately northeast-southwest, extends under the landfill area in the INT unit: however, the S1 unit is not impacted. In conjunction with the preliminary results of the December 1993 monitoring event, the results also indicate that the new INT injection and production wells in this area are performing well and are enhancing remediation efforts in the landfill area. A program of additional monitoring, injection, and production wells has been developed to enhance remediation rates in the plume defined to date, and to explore the extent of the plume further to the west.

4.3.3 Eastern Area Well Installation

In conjunction with the above well installation program, additional injection and production wells are planned in the S1-13 and S1-16 areas, outside the floodwall, to enhance remediation rates in the VOC plumes that were defined by the DNAPL study in these two areas.

4.3.4 S1 Unit Pulse Pumping

Pulse pumping continued as several S1 unit production wells which are close to cleanup criteria but which either exhibited bounceback phenomena (described in the January 1994 Bounceback Test Report) or may do. Rather than perform a bounceback test at any well nearing criteria, pulse pumping was initiated as a precaution. The pulse pumping schedule is weekly and started on January 24. The current pulse pumping schedule is shown in Table 4-3. The following wells are in the pulse-pumping program: S1-23, -33, -34, -36, 37, -38, and -42. Wells S1-35 and S1-43 have been taken off line since they did not show bounceback effects in the three-month S1 unit bounceback study.

4.4 Operational Refinements

Injection water supply was changed to approximately 25% treated water during the reporting period.

4.5 Data Summary and Discussion

4.5.1 Groundwater Production and Injection

4.5.1.1 Groundwater Production

Daily flows from the production well system during February and calculated organic carbon removal rates are shown in Table 4-1 and Figure 4-1. A summary of production data for the month is presented in Section 4.1.1.1. The flow out of tank T-101, measured by meter FQ-101A, is the best indicator of total groundwater produced by the production well system, as long as there is no recycling of treated water into T-101, as was the case during February. Meters FQ-901 and FQ-902 are used to indicate the relative flows from the north and south well systems. About 55% of the month's total groundwater production was produced from north of Gulf Pump Road (Systems 3, 4, 5, and 6), and 45% from south of Gulf Pump Road (Systems 1 and 2). Lower flows from the south of Gulf Pump Road reflect the shutoff of S1 production wells for the bounce-back test.

The production from each unit is determined from individual well meter readings. Production rates at individual wells during February are presented in Table 4-4. Although the individual well meters are not as accurate as larger flow meters, they provide the best indication of how the total groundwater production figure is distributed between the S1 and INT units.

Table 4-3

Pulse Pumping Program

Date	S1-23 & 42	S1-33, 34, 36, & 37	Sampling
1/3/94	ON	ON	
1/10/94	ON	ON	
1/17/94	ON	ON	
1/24/94	OFF	OFF	Recovery monitoring
1/31/94	ON	ON	
2/7/94	ON	OFF	
2/14/94	OFF	ON	S1-33, 34, 36, & 37
2/21/94	ON	OFF	S1-23 & 42
2/28/94	OFF	ON	
3/7/94	ON	OFF	
3/14/94	OFF	ON	S1-33, 34, 36, & 37
3/21/94	ON	OFF	S1-23 & 42
3/28/94	OFF	ON	
4/4//94	ON	OFF	
4/11/94	OFF	ON	S1-33, 34, 36, & 37
4/18/94	ON	OFF	S1-23 & 42

Samples will be collected on the weeks shown, at the start of the ON cycle; samples will be collected after running well pump for 60 minutes; analysis for VOCs only.

4.5.1.2 Groundwater Injection

Recharge to the S1 unit consists of injection at dedicated wells, and natural recharge from ponds and sloughs. Recharge to the INT unit consists of injection at dedicated wells, and leakage from the overlying S1 unit where the intermediate C1 clay does not provide a hydraulic barrier. Based on previous interpretation of C1 clay isopach contours, there are several likely areas for interconnection between the S1 and INT units.

Daily injection flows into the S1 and INT units during February are shown in Table 4-2 and Figure 4-2. Injection rates at individual wells during February are presented in Table 4-4. A summary of injection data for the month is presented in Section 4.1.1.2. February period measured rainfall was 0.0 inches.

4.5.2 Groundwater Levels and Flow Directions

Water level readings for the S1 and INT units were measured on February 3-4. Regional groundwater elevation contours for the S1 and INT units in the groundwater remediation area are presented in Figures 4-3 and 4-4.

These figures also show the extent of groundwater contamination for the baseline period (December 1991). Regional groundwater levels were generally similar to those in October, and the current extent of contaminated groundwater is contained within the S1 and INT extraction system capture zones.

4.5.2.1 S1 Unit

In February, groundwater levels were generally similar to those in January. Recharge from surface water bodies (i.e., ponds east of the Sikes site, Riverdale Lake, and the South and East Ponds) appear to strongly influence S1 unit groundwater elevations and flow directions. Surface water recharge near the Sikes site and the Riverdale subdivision encourages groundwater flow toward the east, i.e., towards the site.

4.5.2.2 INT Unit

Groundwater levels in the western area of the INT unit were available for the first time in February 1994. Previously, "ERT" wells (screened in both S1 and INT units) were used to indicate the INT unit water level. Newly-installed INT monitoring wells INT-132 through INT-139 provide unit-specific groundwater levels. These show that the ERT wells represent S1 unit conditions, and are unrepresentative of INT groundwater levels.

Table 4-4

Average Production and Injection Flow Rates - February 1994

S1 Production Wells (49)

Well ID	gpm
S1-1	0.81
S1-2	0.64
S1-3	0.46
S1-4	0.17
S1-5	0.01
S1-6	2.72
S1-7	1.37
S1-8	0.60
S1-9	2.30
S1-10	1.93
S1-11	2.82
S1-12	0.23
S1-13	2.95
S1-14	0.39
S1-15	0.74
S1-16	NM
S1-17	0.86
S1-18	0.87
S1-19	2.37
S1-20	0.20
S1-21	1.88
S1-22	4.10
S1-23	5.44
S1-24	4.07
S1-25	1.18
S1-26	3.83
S1-27	0.73
S1-28	0.85
S1-29	0.62
S1-30	5.02
S1-31	3.65
S1-32	2.54
S1-33	3.66
S1-34	2.25
S1-35	0.08
S1-36	3.64
S1-37	3.16
S1-38	0.17
S1-39	6.94
S1-40	2.27
S1-41	5.47
S1-42	5.93
S1-43	OFF
S1-44	3.63
S1-45	6.70
S1-46	10.12
S1-47	4.58
S1-48	1.72
S1-60	3.76
Total	120.4
Average	2.56

S1 Injection Wells (11)

Well ID	gpm
S1-49	3.26
S1-50	3.97
S1-51	2.07
S1-52	4.12
S1-53	4.27
S1-54	4.63
S1-55	3.00
S1-56	4.27
S1-57	2.77
S1-58	2.01
S1-59	2.36
Total	36.7
Average	3.34

Notes
OFF - well not pumping
NM - well pumping but not metered

INT Production Wells (50)

Well ID	gpm
INT-1	0.93
INT-2	0.37
INT-3	0.14
INT-4	0.18
INT-5	0.81
INT-6	0.09
INT-7	0.18
INT-8	0.76
INT-9	0.51
INT-10	2.89
INT-11	0.32
INT-12	1.10
INT-13	0.28
INT-14	0.22
INT-15	0.75
INT-16	0.25
INT-17	0.21
INT-18	0.38
INT-19	1.11
INT-20	0.08
INT-21	0.33
INT-22	0.45
INT-23	0.29
INT-24	0.62
INT-25	0.51
INT-26	0.37
INT-27	1.78
INT-28	0.54
INT-29	2.32
INT-30	0.68
INT-31	1.89
INT-32	0.82
INT-33	0.08
INT-55	3.79
INT-56	0.28
INT-57	2.94
INT-58	0.92
INT-59	0.25
INT-60	1.73
INT-61	0.47
INT-62	0.33
INT-65	1.60
INT-66	0.88
INT-205	1.48
INT-206	2.51
INT-207	1.95
INT-208	2.80
INT-209	0.59
INT-210	3.50
INT-211	2.31
Total	50.6
Average	1.01

INT Injection Wells (36)

Well ID	gpm
INT-63	3.18
INT-64	3.02
INT-71	2.65
INT-72	0.39
INT-73	0.19
INT-74	1.42
INT-75	0.78
INT-76	2.05
INT-77	2.19
INT-78	1.48
INT-79	0.71
INT-80	1.09
INT-81	0.72
INT-82	0.29
INT-83	1.01
INT-84	1.50
INT-85	1.70
INT-86	1.38
INT-87	1.02
INT-88	0.63
INT-89	4.31
INT-90	1.73
INT-91	1.59
INT-92	2.36
INT-93	0.81
INT-94	1.27
INT-95	1.18
INT-96	0.67
INT-97	0.45
INT-98	1.64
INT-99	1.74
INT-100	0.81
INT-201	3.07
INT-202	1.00
INT-203	1.74
INT-204	1.14
Total	52.9
Average	1.47

Figure 4-3

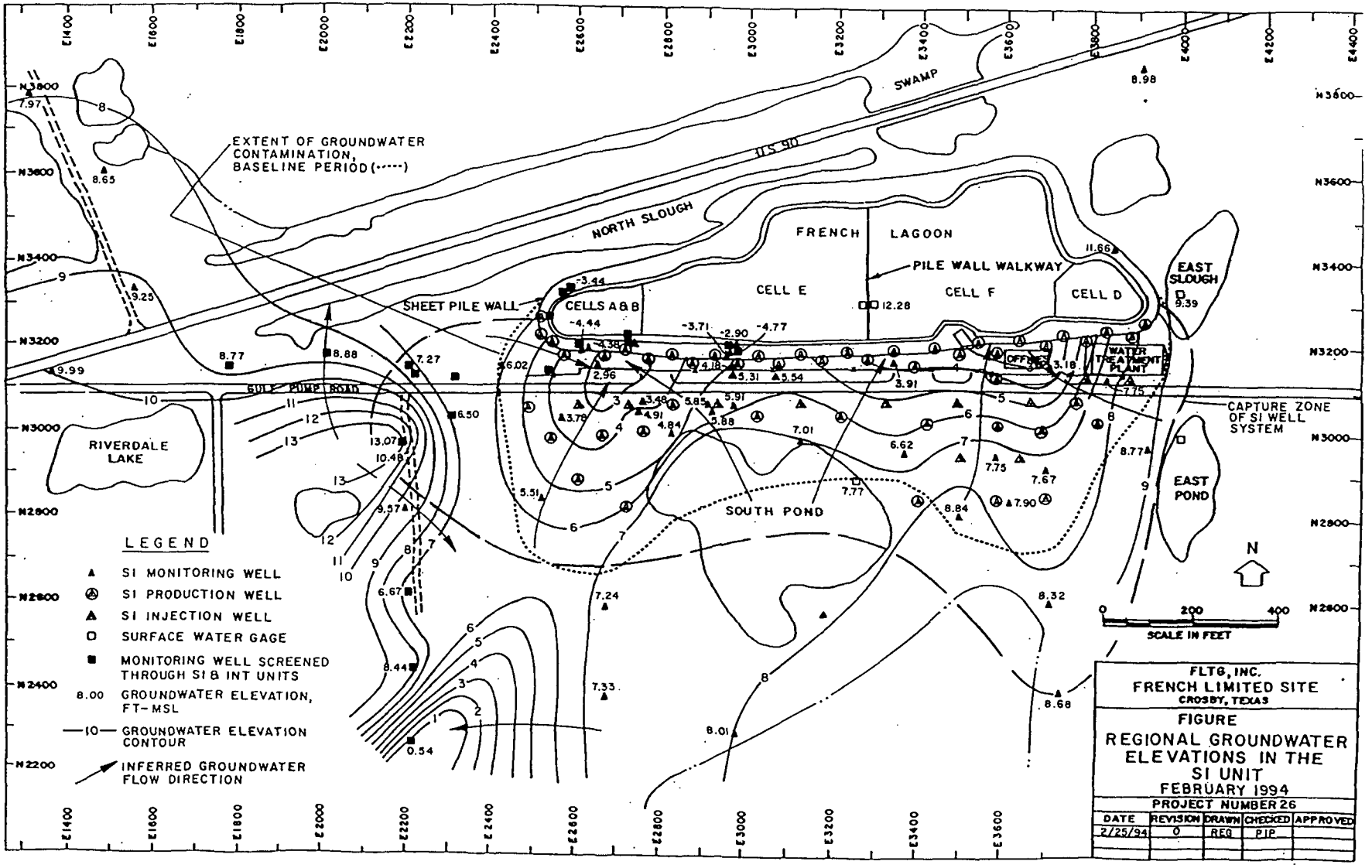
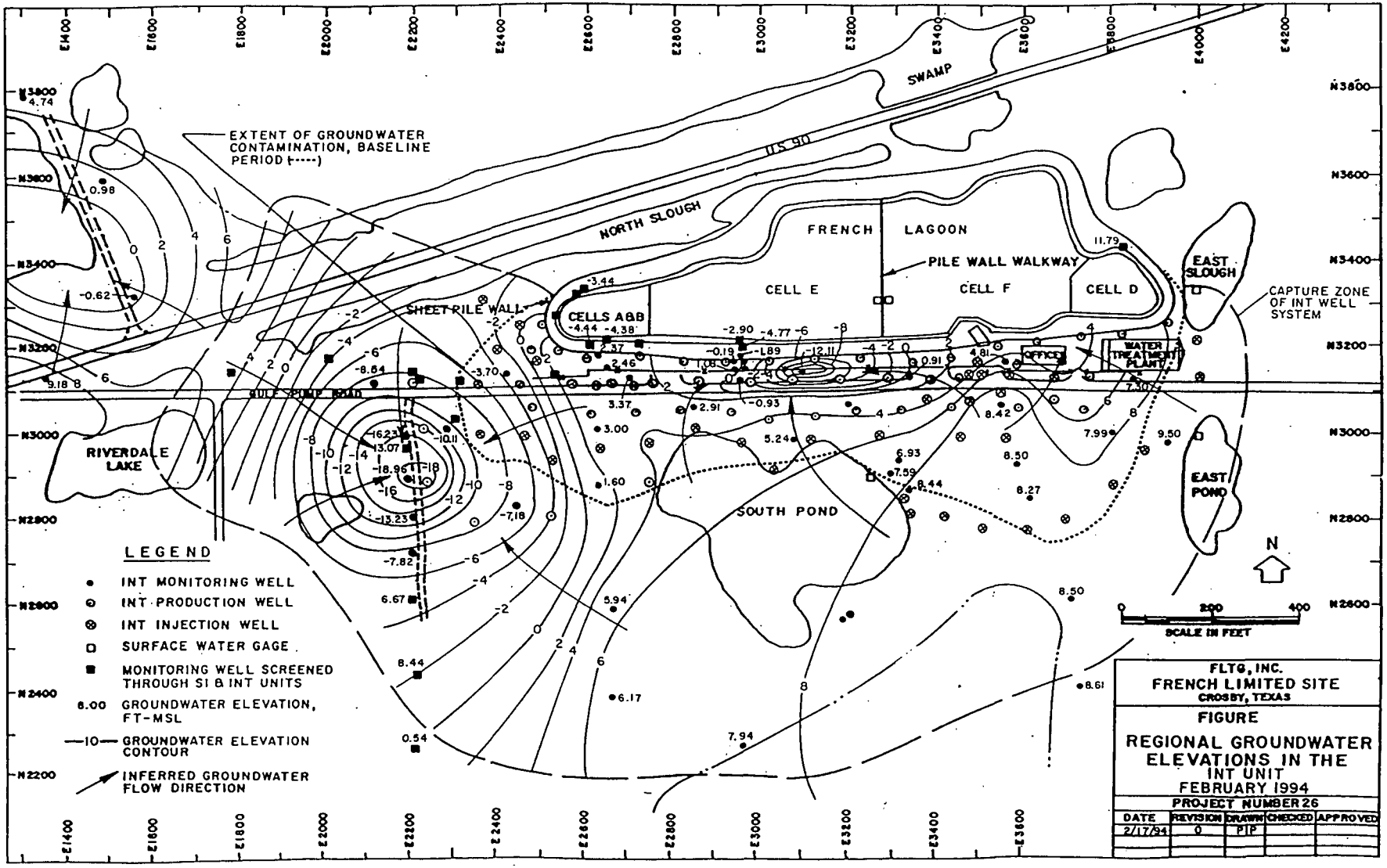

EXTENT OF GROUNDWATER CONTAMINATION, BASELINE PERIOD (·····)
SWAMP
U.S. 90
NORTH SLOUGH
FRENCH LAGOON
PILE WALL WALKWAY
SHEET PILE WALL
CELLS A & B
CELL E
CELL F
CELL D
EAST SLOUGH
WATER TREATMENT PLANT
GULF PUMP ROAD
RIVERDALE LAKE
SOUTH POND
EAST POND
CAPTURE ZONE OF SI WELL SYSTEM
LEGEND
SI MONITORING WELL
SI PRODUCTION WELL
SI INJECTION WELL
SURFACE WATER GAGE
MONITORING WELL SCREENED THROUGH SI & INT UNITS
8.00 GROUNDWATER ELEVATION, FT-MSL
10 GROUNDWATER ELEVATION CONTOUR
INFERRED GROUNDWATER FLOW DIRECTION
N
0 200 400
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
REGIONAL GROUNDWATER ELEVATIONS IN THE SI UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE 2/25/94
REVISION 0
DRAWN REG
CHECKED PJP
APPROVED

Figure 4-4


EXTENT OF GROUNDWATER CONTAMINATION, BASELINE PERIOD (-----)
SWAMP
U.S. 90
NORTH SLOUGH
FRENCH LAGOON
PILE WALL WALKWAY
CELL E
CELL F
CELL D
EAST SLOUGH
CAPTURE ZONE OF INT WELL SYSTEM
SHEET PILE WALL
CELLS A&B
OFFICE
WATER TREATMENT PLANT
GULF PUMP ROAD
RIVERDALE LAKE
SOUTH POND
EAST POND
LEGEND
INT MONITORING WELL
INT PRODUCTION WELL
INT INJECTION WELL
SURFACE WATER GAGE
MONITORING WELL SCREENED THROUGH SI & INT UNITS
8.00 GROUNDWATER ELEVATION, FT-MSL
-10- GROUNDWATER ELEVATION CONTOUR
INFERRED GROUNDWATER FLOW DIRECTION
N
200 400
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
REGIONAL GROUNDWATER ELEVATIONS IN THE INT UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE REVISION DRAWN CHECKED APPROVED
2/17/94 0 PIP

In February, regional groundwater levels over most of the site were generally similar to those in January. However, data from the new INT monitoring wells indicated that drawdowns in the western part of the site were much greater than elsewhere and higher than previously anticipated. Pump and probe settings in western INT production wells INT-205 through INT-211 were initially set aggressively low, to maximize production in case of low INT unit transmissivity. However, INT transmissivity appears to be higher than normal in this area. As a result of these findings, control probe settings were raised at these production wells on February 22.

In the western part of the site, hydraulic gradients in the INT unit still appear to be toward the Sikes extraction wells in the vicinity of the Sikes site, and toward the French extraction system nearer the French site. This would result in no migration of groundwater between the two sites. However, increased extraction from the western side of the French site could change this pattern. Also, interpretation of groundwater levels near the Sikes site would benefit from Sikes site water level data, if available.

4.5.3 TOC in shallow groundwater

Samples were collected from 97 out of 98 production wells on February 8 for TOC analyses on-site (excluding INT-65). Sampling was performed to monitor trends in organic carbon removal from groundwater and to provide a basis for controlling organic loading to the WTP. Summaries of TOC concentrations from the start of remediation to date for each unit are presented in Tables 4-5 and 4-6. TOC contour maps are presented in Figures 4-5 and 4-6. TOC distributions in both units were generally similar to January. The large increase at S1-38 reflects likely bounceback effects.

4.5.3.1 TOC Removal from Shallow Aquifer

The history of daily flows, TOC concentration, and TOC input to T-101 is presented in Table 4-1. Due to the method of analysis, the on-site TOC measurements used to generate Table 4-1 reflect only the non-purgeable organic carbon fraction. The average daily TOC concentration of pumped groundwater during February ranged from 28 to 314 mg/L and averaged 163 mg/L. At this concentration, the average non-purgeable TOC removal rate was 143 kg (315 lb) per day.

Table 4-5

HISTORY OF TOC CONCENTRATIONS
AT S1 PRODUCTION WELLS

Well ID	Baseline Nov-Dec 91 (ppm)	Maximum Feb-Dec 92 (ppm)	Minimum 1993 (ppm)	Maximum 1993 (ppm)	Average 1993 (ppm)	Jan 1994 (ppm)	Feb 1994 (ppm)
S1-1	290	475	390	910	634	1025	1150
S1-2	190	796	460	1204	832	1037	909
S1-3	370	1071	384	1610	862	1090	1120
S1-4	47	866	560	1044	786	848	1300
S1-5	51	646	548	950	714	1079	624
S1-6	51	800	482	1084	816	1202	1340
S1-7	200	787	710	1084	879	NS	1290
S1-8	64	927	465	1072	769	1118	1290
S1-9	77	506	225	1530	830	1809	2020
S1-10	46	214	147	2105	1381	2251	2610
S1-11	120	281	270	1848	1193	2004	2210
S1-12	140	1002	585	2260	1200	2313	2390
S1-13	520	894	404	760	598	771	930
S1-14	590	1730	626	2304	1214	1502	1077
S1-15	5300	4910	336	3696	2374	3373	2756
S1-16	8900	8900	180	3122	1651	NS	2056
S1-17	6800	5550	405	1106	750	627	388
S1-18	2200	2043	52	196	112	90	101
S1-19	20	914	53	220	110	26	37
S1-20	120	1360	60	192	126	25	95
S1-21	65	418	23	1020	134	113	48
S1-22	290	1080	8	1010	123	12	6
S1-23	350	234	7	1315	137	24	14
S1-24	250	240	16	200	52	25	16
S1-25	550	660	11	91	35	26	16
S1-26	540	575	14	84	34	25	25
S1-27	220	219	52	400	119	51	62
S1-28	370	520	11	380	64	275	29
S1-29	670	496	16	182	47	50	62
S1-30	370	711	27	604	113	51	50
S1-31	14	712	15	70	34	0	57
S1-32	18	347	30	910	185	100	132
S1-33	10	30	12	55	30	101	99
S1-34	11	50	24	94	50	79	90
S1-35	24	154	22	95	68	25	43
S1-36	200	162	10	106	56	60	49
S1-37	13	71	12	180	44	50	52
S1-38	59	73	1	52	21	NS	1540
S1-39	290	414	17	96	35	15	25
S1-40	150	210	25	268	70	38	25
S1-41	170	116	14	84	31	1	48
S1-42	88	103	5	35	17	0	11
S1-43	4	36	6	50	24	1	21
S1-44	280	204	9	45	25	25	19
S1-45	4400	588	14	174	51	37	20
S1-46	480	462	4	76	18	1	11
S1-47	1200	1390	25	155	79	150	72
S1-48	1200	1505	15	133	52	50	34
S1-60	48	91	8	126	28	25	11

NS = Not Sampled

Table 4-6

HISTORY OF TOC CONCENTRATIONS
AT INT PRODUCTION WELLS

Well ID	Baseline Nov-Dec 91 (ppm)	Maximum Feb-Dec 92 (ppm)	Minimum 1993 (ppm)	Maximum 1993 (ppm)	Average 1993 (ppm)	Jan 1994 (ppm)	Feb 1994 (ppm)
INT-1	3600	3600	460	1584	1029	1050	718
INT-2	1800	1120	215	900	414	174	230
INT-3	5200	2030	218	1935	1389	2080	1926
INT-4	610	928	330	793	526	587	1300
INT-5	960	1689	190	536	356	263	248
INT-6	280	973	90	1140	556	720	451
INT-7	100	245	24	1100	308	99	74
INT-8	75	666	24	196	90	112	103
INT-9	800	1413	101	358	178	188	174
INT-10	1900	1328	57	186	109	100	93
INT-11	590	1816	80	171	117	175	186
INT-12	3300	1820	141	1255	399	364	239
INT-13	590	924	40	251	122	99	67
INT-14	24	1026	58	492	266	226	154
INT-15	19	1760	9	38	20	12	34
INT-16	2000	2230	6	147	28	13	12
INT-17	7	252	39	184	81	152	25
INT-18	4	129	139	270	183	225	230
INT-19	1400	1800	52	332	158	112	76
INT-20	3500	3742	901	3141	2123	2147	1960
INT-21	29	301	130	325	260	362	327
INT-22	8	68	18	76	45	43	58
INT-23	16	74	43	112	73	48	53
INT-24	240	434	38	472	293	202	174
INT-25	36	376	58	272	169	75	60
INT-26	120	970	143	837	430	203	173
INT-27	180	324	107	268	196	75	109
INT-28	630	648	57	288	200	187	80
INT-29	1100	1120	74	450	245	162	130
INT-30	1400	606	43	294	129	112	60
INT-31	70	540	29	120	62	12	67
INT-32	880	470	48	208	119	124	26
INT-33	120	1710	25	1620	910	1374	1006
INT-55	NS	NS	53	53	53	235	113
INT-56	NS	NS	668	668	668	901	824
INT-57	NS	NS	28	28	28	12	29
INT-58	NS	NS	102	102	102	10	94
INT-59	NS	NS	121	121	121	100	104
INT-60	NS	NS	172	172	172	201	169
INT-61	NS	NS	56	56	56	79	80
INT-62	NS	NS	52	52	52	75	197
INT-66	NS	NS	114	114	114	125	132
INT-205	NS	NS	31	31	31	39	132
INT-206	NS	NS	24	24	24	218	48
INT-207	NS	NS	66	66	66	101	71
INT-208	NS	NS	27	27	27	19	53
INT-209	NS	NS	35	35	35	40	62
INT-210	NS	NS	36	36	36	42	48
INT-211	NS	NS	109	109	109	151	127

NS = Not Sampled

Figure 4-5

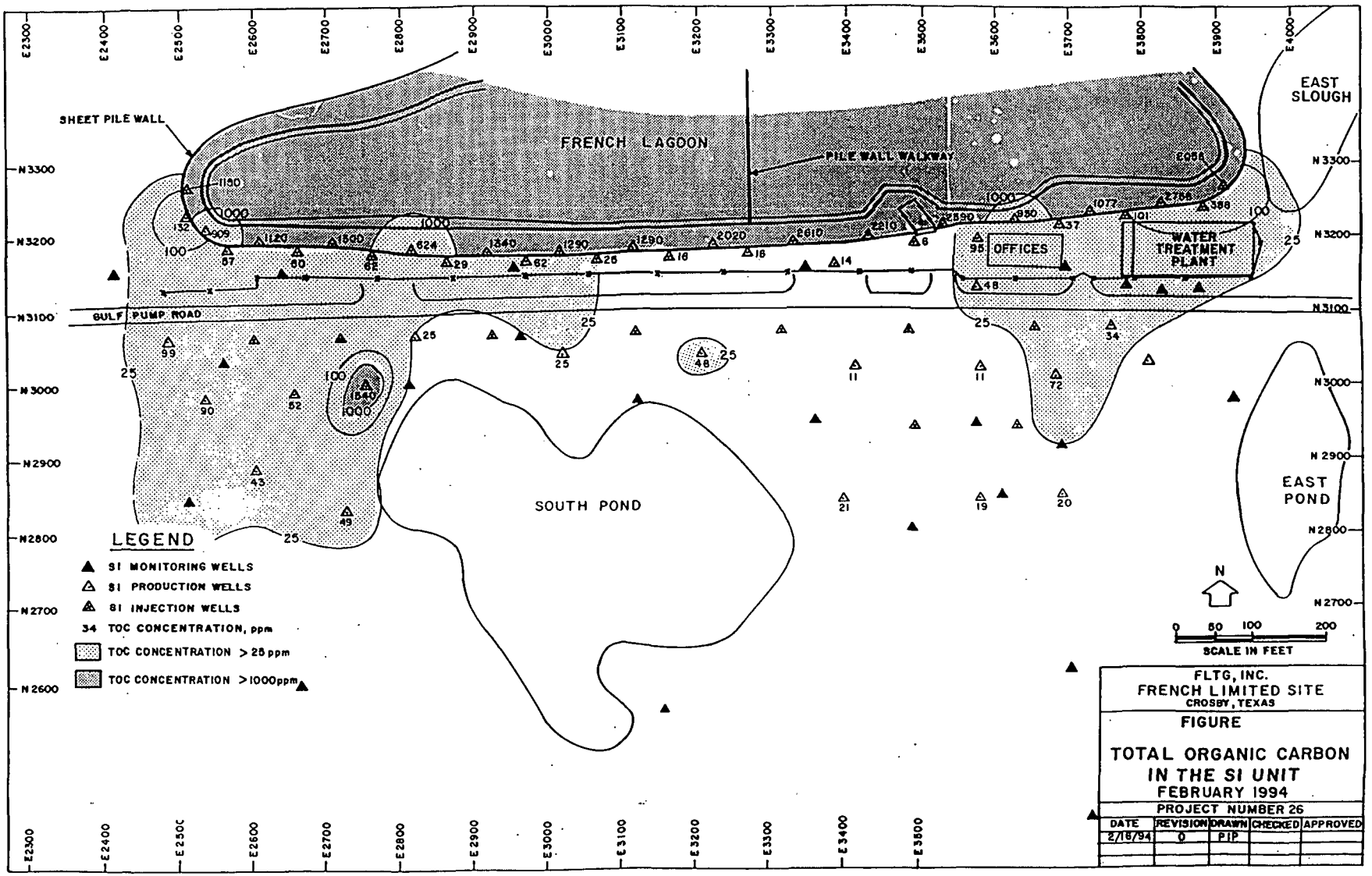
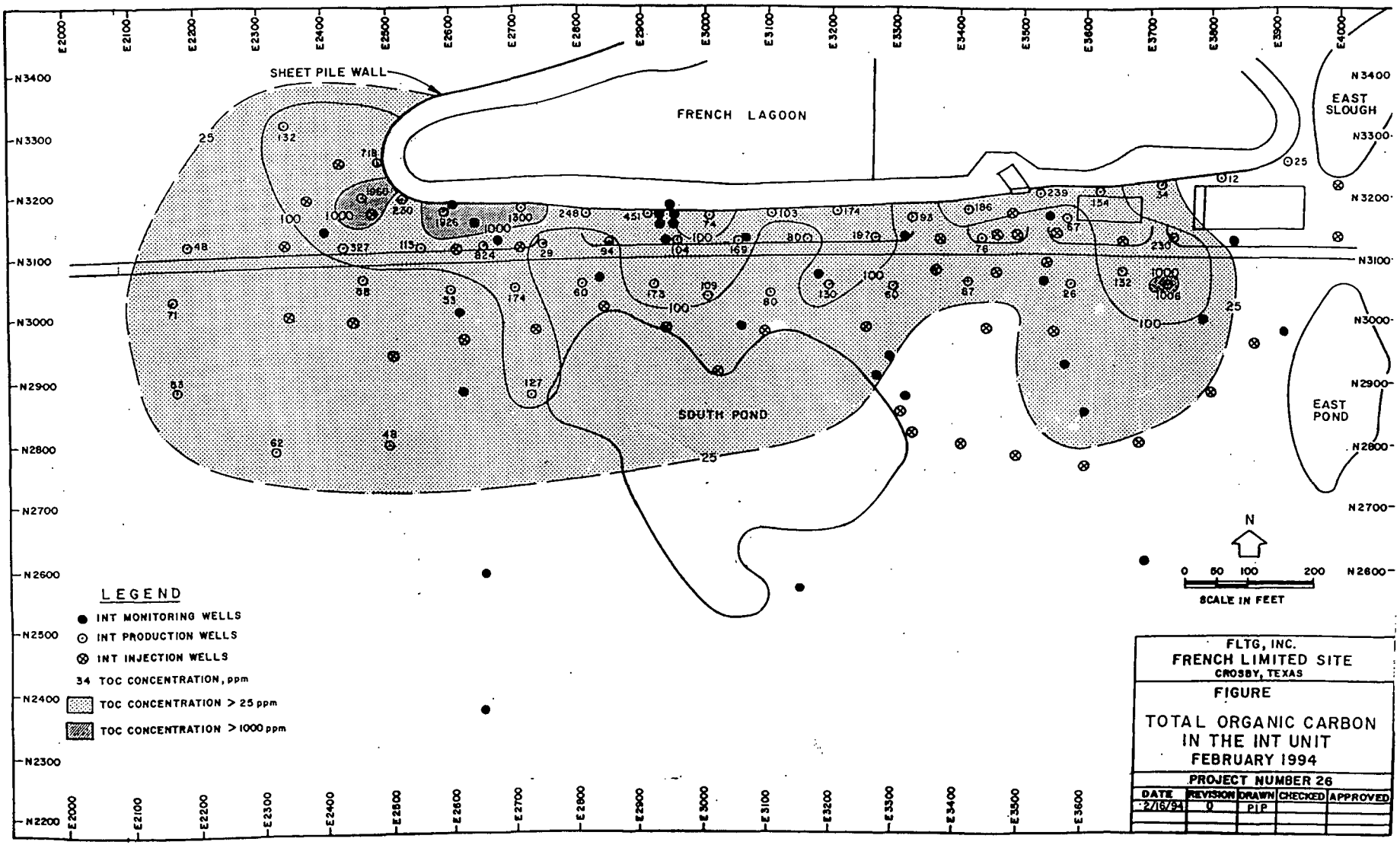

SHEET PILE WALL
FRENCH LAGOON
PILE WALL WALKWAY
EAST SLOUGH
OFFICES
WATER TREATMENT PLANT
GULF PUMP ROAD
SOUTH POND
EAST POND
LEGEND
SI MONITORING WELLS
SI PRODUCTION WELLS
SI INJECTION WELLS
34 TOC CONCENTRATION, ppm
TOC CONCENTRATION > 25 ppm
TOC CONCENTRATION >1000ppm
N
0 50 100 200
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
TOTAL ORGANIC CARBON
IN THE SI UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE REVISION DRAWN CHECKED APPROVED
2/16/94 0 PIP

Figure 4-6


SHEET PILE WALL
FRENCH LAGOON
EAST SLOUGH
SOUTH POND
EAST POND
LEGEND
INT MONITORING WELLS
INT PRODUCTION WELLS
INT INJECTION WELLS
34 TOC CONCENTRATION, ppm
TOC CONCENTRATION > 25 ppm
TOC CONCENTRATION > 1000 ppm
N
0 50 100 200
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
TOTAL ORGANIC CARBON IN THE INT UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE 2/16/94
REVISION 0
DRAWN PJP
CHECKED
APPROVED

4.5.4 In-Situ Bioremediation

No major changes in in-situ bioremediation system operation or response occurred in February. The emphasis continues to be to maximize delivery of oxygen and nutrients to the INT system. The additional well program planned for the western area of the INT unit should assist in this goal. Oxygen delivery continues to be evidenced by higher-than-ambient DO concentrations at certain monitoring wells (see Figures 4-7 and 4-8), but is not widespread over the shallow aquifer.

4.6 Schedule

A program of installation of additional INT unit monitoring, injection, and production wells in the landfill area, and S1 unit injection and production wells in the S1-13 and S1-16 areas outside the floodwall, is currently planned to begin in March.

Figure 4-7

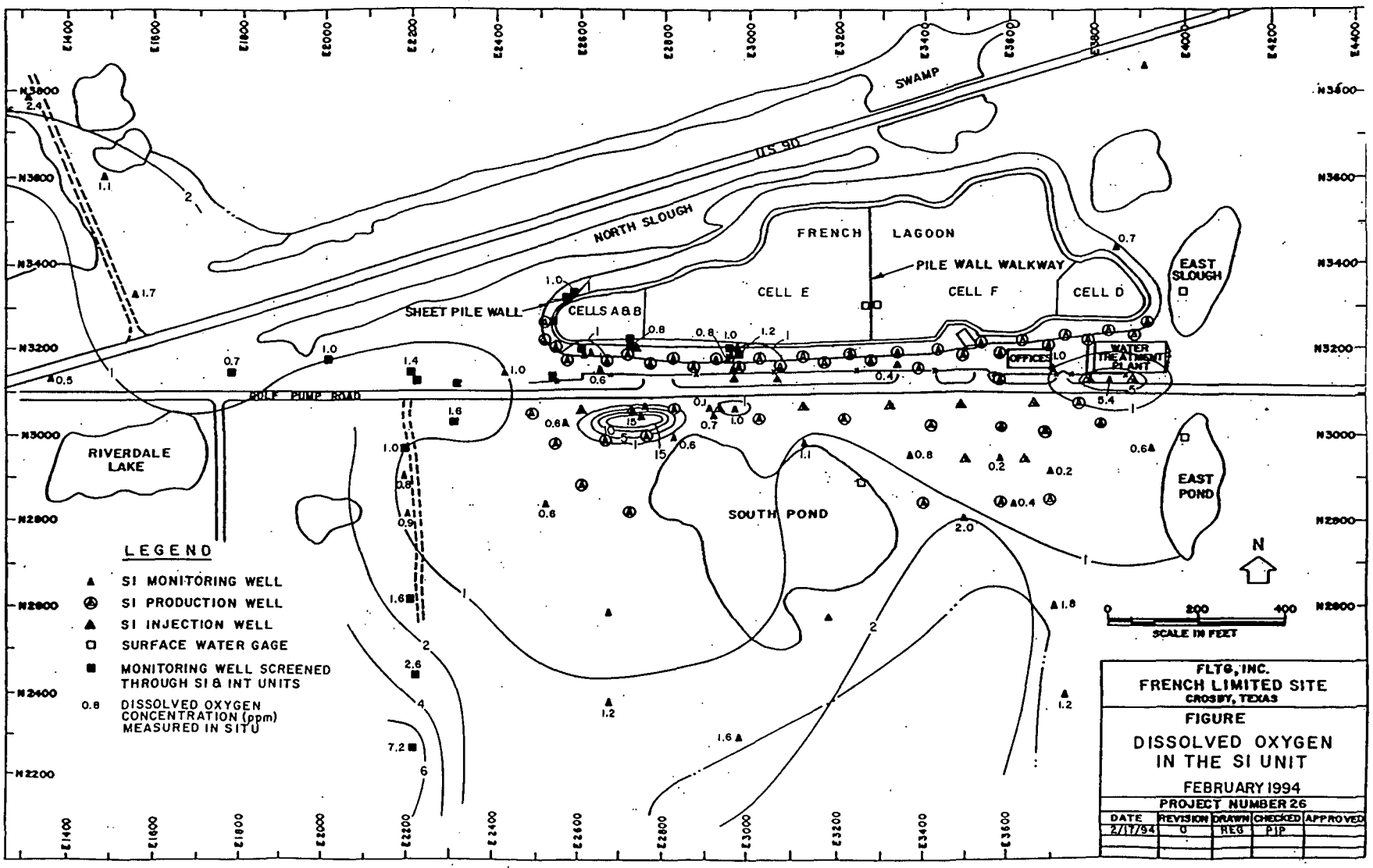
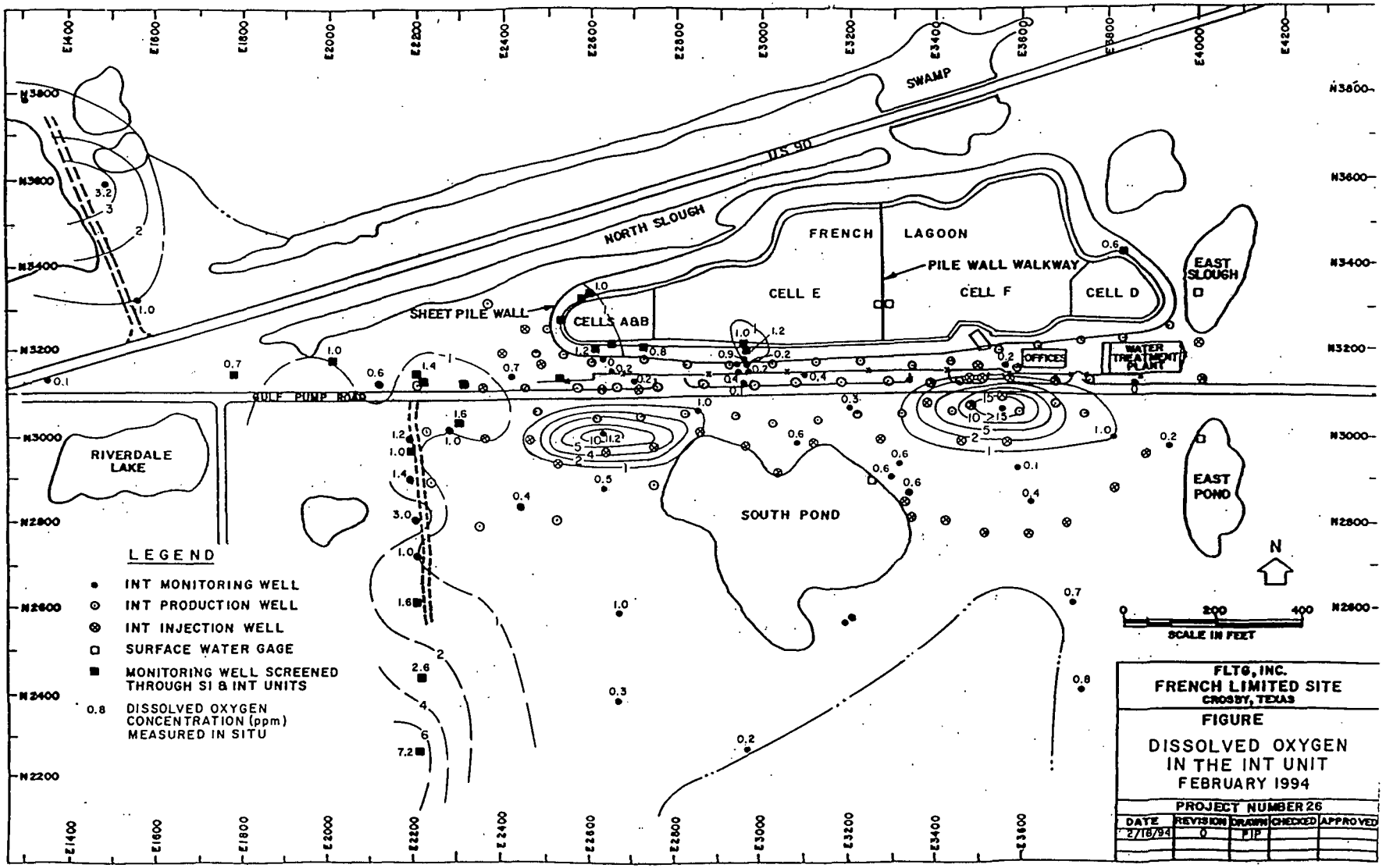

SWAMP
IH 10
NORTH SLOUGH
FRENCH LAGOON
PILE WALL WALKWAY
CELL E
CELL F
CELL D
EAST SLOUGH
SHEET PILE WALL
CELLS A & B
OFFICE
WATER TREATMENT PLANT
GULF PUMP ROAD
RIVERDALE LAKE
SOUTH POND
EAST POND
LEGEND
SI MONITORING WELL
SI PRODUCTION WELL
SI INJECTION WELL
SURFACE WATER GAGE
MONITORING WELL SCREENED THROUGH SI & INT UNITS
0.8 DISSOLVED OXYGEN CONCENTRATION (ppm) MEASURED IN SITU
N
0 200 400
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
DISSOLVED OXYGEN IN THE SI UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE 2/17/94
REVISION 0
DRAWN REG
CHECKED PJP
APPROVED

Figure 4-8


SWAMP
U.S. 90
NORTH SLOUGH
FRENCH LAGOON
PILE WALL WALKWAY
CELL E
CELL F
CELL D
CELLS A&B
SHEET PILE WALL
EAST SLOUGH
OFFICES
WATER TREATMENT PLANT
GULF PUMP ROAD
RIVERDALE LAKE
SOUTH POND
EAST POND
LEGEND
INT MONITORING WELL
INT PRODUCTION WELL
INT INJECTION WELL
SURFACE WATER GAGE
MONITORING WELL SCREENED THROUGH S1 & INT UNITS
0.8 DISSOLVED OXYGEN CONCENTRATION (ppm) MEASURED IN SITU
N
0 200 400
SCALE IN FEET
FLTG, INC.
FRENCH LIMITED SITE
CROSBY, TEXAS
FIGURE
DISSOLVED OXYGEN IN THE INT UNIT
FEBRUARY 1994
PROJECT NUMBER 26
DATE 2/18/94
REVISION 0
DRAWN FJP
CHECKED
APPROVED

5.0 GROUNDWATER TREATMENT PLANT

5.1 Summary of Activities

Operations for the Groundwater Treatment Plant has concentrated on two issues for the month of February. As reported in January, a well chlorination program was initiated to improve production from the aquifer. After a month of treatment, solids from the pumps and manifolds have accumulated in the bioreactors that have posed problems within the system. An aggressive wasting schedule was in effect for February as evidenced by the flows of sludge wasted to the lagoon listed below. Toward the end of the reporting period a balance was achieved and solids management will become a part of our chlorination program to include laboratory analysis of Total Solids of the influent.

The other issue that is being addressed is the preparation of the blending system around the carbon filter. New lamps and a reactor were installed in February for a quicker response signal from the on-site analyzer. A new building was placed in the GWT plant to better control temperature fluctuations, therefore, having less down time for calibration and cleaning. With these in place, blending will start the first week of March.

There were no San Jacinto River discharge violations for the month of February from available laboratory data.

There were no major mechanical repairs for February.

Total flows for February:

Water discharged to the San Jacinto River - 9,581,000 gallons

Water discharged to the Lagoon - 0 gallons

Sludge discharged to the Lagoon - 56,800 gallons

Water processed through the GWT - 6,679,900 gallons

Water discharged to the South Pond - 0 gallons

Water processed from Cell E to GWT - 2,699,400 gallons
(included in Attachment 5A)

5.2 Inoculum/Nutrient Addition

The following have been introduced into the bioreactors/clarifier:

Nutrients:

905 gallons 11-37-0

Microbes:

16 oz. French Limited Isolated Microbes

Coagulant:

34 gallons Percol 787 Anionic Polymer

5.3 Maintenance

Table 5-1 lists the preventive maintenance items performed in February.

5.4 Operating Data

1. Operator logs and records are included in Appendix D.

2. Table 5-2 summarizes the laboratory analysis of the treated water discharged to the San Jacinto River.

TABLE 5-1

Preventive Maintenance

Day	Action
February 7	Completed inspection of all electrical equipment.
February 11	Carbon filter transfer. Checked oil and lubed Blowers #1, #2, and #3.
February 16	Rotated Sala Pumps. Lubed all equipment in the GWT plant. Checked oil leak on clarifier mixers, tightened drain plug.
February 21	Rotated Sala Pumps.
February 22	Carbon filter transfer. Tightened belts on Blower #2.
February 24	Lubed equipment in GWT plant. Lubed all red valves. Lubed gate rollers.

TABLE 5-2

Treated Water Results Summary

Collected	Set #	pH	TSS	TOC	O & G	Benzene	Chlor HC's	Tot PCB's	Naphthalene
Parameter		pH	TSS	TOC	O & G	Benzene	Chlor HC's	Tot PCB's	Naphthalene
Grab Limit		6 to 9	5 PPM	55 PPM	15 PPM	150 PPB	500 PPB	0.65 PPB	300 PPB
Comp Limi		6 to 9	5 PPM	55 PPM	15 PPM	150 PPB	500 PPB	0.50 PPB	300 PPB
10/04/93	M03A0172	7.43	<2	4.4	<5.6	<5	<100	<0.25	<10
10/07/93	M03A0173	7.9	<2	<1	<10	<5	<100	<0.25	<10
10/11/93	M03A0174	8.14	<2.1	3.2	<5.6	<5	<100	<0.25	<10
10/14/93	M03A0175	7.95	2.4	<1	<5.6	<5	<100	<0.25	<10
10/18/93	M03A0176	7.6	<2	<1	<5.6	<5	<100	<0.25	<10
10/21/93	M03A0177	7.76	<2	2.9	<5.6	<5	<100	<0.25	<10
10/25/93	M03A0178	7.48	2	13	<5.5	<5	<100	<0.25	<10
10/28/93	M03A0179	8.31	2.1	<1	<5.9	<5	<100	<0.25	<10
11/01/93	M03A0180	8.21	4	2	<5.6	<5	<100	<0.25	<10
11/04/93	M03A0181	8.07	2	1.3	<5.6	<5	<100	<0.25	<10
11/08/93	M03A0182	8	2	4.5	<5.6	<5	<100	<0.25	<10
11/11/93	M03A0183	7.84	<2	<1	<5.6	<5	<100	<0.25	<10
11/15/93	M03A0184	8.08	<2.1	<1	<5.6	<5	<100	<0.5	<10
11/18/93	M03A0185	7.74	<2	<1	<5.6	<5	<100	<0.25	<10
11/22/93	M03A0186	7.77	<2	<1	<5.1	<5	<100	<0.25	<10
11/25/93	M03A0187	7.62	2	<1	<5.6	<5	<100	<0.25	<10
11/29/93	M03A0188	7.47	2	12	<5.6	<5	8	<0.25	<10
12/02/93	M03A0189	7.64	<2	10	<5.5	<5	14	<0.25	<10
12/06/93	M03A0190	7.99	<2	<1	<5.3	<5	4	<0.5	<10
12/09/93	M03A0191	7.63	<2	5.1	<5.3	<5	8	<0.25	<10
12/13/93	M03A0192	7.5	2	13.3	<5.3	<5	4	<0.5	<10
12/16/93	M03A0193	7.58	2	15	<5.3	<5	<100	<0.25	<10
12/20/93	M03A0194	8.13	<2.2	1.4	<5.3	<5	<100	<0.25	<10
12/23/93	M03A0195	7.82	<2	1.8	<5.9	<5	<100	<0.25	<10
12/27/93	M03A0196	7.63	<2	6.7	<5.3	<5	<100	<0.25	<10
12/31/93	M03A0197	7.98	<2.2	<1	<5.6	<5	<100	<0.25	<10
01/03/94	M03A0198	7.8	<2	4.7	<5.6	<5	<100	<0.25	<10
01/06/94	M03A0199	7.78	<2	<1	<5.3	<5	<100	<0.25	<10
01/10/94	M03A0200	8.21	2	4.2	<5.3	<5	<100	<0.25	<10
01/13/94	M03A0201	8.17	4	7.9	<5.6	<5	<100	<0.25	<10
01/17/94	M03A0203	7.79	<2.1	9	<5.4	<5	8	<0.25	<10
01/20/94	M03A0202	7.75	<2	6.1	<5.4	<5	8	<0.25	<10
01/24/94	M03A0204	7.6	2	12	<5.4	<5	19	<0.25	<10
01/27/94	M03A0205	7.5	<2	11	<5.4	<5	16	<0.25	<10
01/31/94	M03A0206	8.02	2.1	6.2	<5.6	<5	<100	<0.25	<10
02/03/94	M03A0207	7.6	<2	3.8	<5.6	<5	26	<0.25	<10
02/07/94	M03A0208	7.57	<2.2	12	<5.3	<5	19	<0.25	<10
02/10/94	M03A0209	7.98	2	9.7	<5.6	<5	45	<0.25	<10
02/14/94	M03A0210	8.04	<2	3.8	<5.6	<5	37	<0.25	<10
02/17/94	M03A0211	7.87	2	4.2	<5.3	<5	15	<0.25	<10
02/21/94	M03A0212	7.53	<2	8.6	<5.3	<5	21	<0.25	<10
02/24/94	M03A0213	8.14	2.2	4	<5.6	<5	19	<0.25	<10
02/28/94	M03A0214								

Chlor HC's value is sum of 21 Chlorinated HC's in 8240 TC list. Metals values in PPM.

TABLE 5-2 (Continued)

Treated Water Results Summary

As	Ba	Cd	Cr	Cu	Pb	Mn	Hg	Ni	Se	Ag	Zn
300	400	152	5000	15	133	3000	2	313	300	8	325
200	2000	72	1000	10	63	2000	2	148	200	4	154
21.2	22.9	<3	<4	<3	<28	<30.4	<0.2	<20	<3	<3	7
35.7	21.4	<3	<4	<3	<28	22.1	<0.2	<20	<3	<3	7.9
23.4	13.5	<3	<4	<3	<28	10.5	<0.2	<20	<3	<3	18.1
25	21.6	<4	<6	<4	<34	8.6	<0.2	<15	<3	<4	8.2
26.3	22.8	<4	<6	4.8	<34	6.2	<0.2	<15	3	<4	14.1
23.7	17.1	<4	<6	<4	<34	8	<0.2	19.8	<3	<4	11.9
13	15.2	<4	<6	<4	<34	6.6	<0.2	24.3	<3	<4	19
19	18.4	<4	<6	<4	<34	4.7	<0.2	<15	<3	<4	6.7
45.8	24.6	<4	<6	<4	<34	4.9	<0.2	<15	<3	<4	4.4
24.5	23.4	<4	<6	<4	<34	2.8	<0.2	<15	2.3	<4	13
26	23.1	<4	<6	4.2	<34	2.5	<0.2	<15	<3	<4	12.3
24.8	21.6	<4	<6	4.3	<34	1.1	<0.2	20.5	<3	<4	15.3
35.9	22	<4	<6	7	<34	8.2	<0.2	<15	<3	<4	10.3
24.6	21.4	<4	<6	<4	<34	3.6	<0.2	<15	<3	<4	25.4
17.8	19.7	<4	<6	<4	<34	7.2	<0.2	<15	<3	<4	18.4
18.9	16.7	<4	<6	<4	<34	9.5	<0.2	<15	<3	<4	26.2
12.6	13.8	<4	<6	<4	<34	13.7	<0.2	23.8	<3	<4	20.1
13.4	8.3	<4	<6	4.7	<34	9.3	<0.2	<15	<3	<4	25
11.9	18	<4	<6	<4	<34	24.4	<0.2	<15	<3	<4	16
9.6	17.6	<4	<6	<4	<34	19.3	<0.2	<15	<3	<4	12.4
7.6	15	<4	<6	<4	<34	19	<0.2	<15	<3	<4	7.6
14.2	20.5	<4	<6	<4	<34	22.7	<0.2	<15	<3	<4	12
14	5.7	<4	<6	<4	<34	4.5	<0.2	<15	<3	<4	17.8
11.1	14	<4	<6	<4	<34	12.6	<0.2	<15	3.5	<4	19.9
12.8	19.3	<4	<6	<4	<34	15.3	<0.2	<15	3.2	<4	22.5
20.7	22.3	<4	<6	<4	<34	17.1	<0.2	<15	3.5	<4	13.6
9.7	18.7	<4	<6	<4	<34	17.5	<0.2	<15	<3	<4	13.5
17.3	17	<4	<6	<4	<34	21.3	<0.2	<15	<3	<4	17.6
15.9	13.3	<4	<6	<4	<34	13.8	<0.2	<15	<3	<4	23
10.8	8.8	<5	<4	<5	<41	12.3	<0.2	<19	3.4	<4	27.9
7.4	15.3	<5	<4	<5	<41	15.2	<0.2	<19	<3	<4	21.2
10.9	12.1	<5	<4	<5	<41	14.8	<0.2	<19	<3	<4	15.6
10	13.2	<5	<4	<5	<41	22.9	<0.2	<19	<3	<4	24.4
11.2	10	<5	<7	<5	<41	24	<0.2	<19	<3	<4	30
17.6	12	<5	<7	<5	<41	17	<0.2	<19	<3	<4	32
11.8	16.4	<5	<7	<5	<41	22.5	<0.2	<19	<1	<4	28.2
9.9	17.1	<5	<4	<5	<41	25.7	<0.2	<19	<3	<3	19
9.3	11.6	<5	<4	<5	<41	11.6	<0.2	<19	<3	<3	18.4
8.7	9.8	<5	<4	<5	<41	9.1	<0.2	<19	<3	<3	12.8
13.4	10.1	<5	<4	<5	<41	24.1	<0.2	<19	<3	<3	11.2
11.1	19.4	<5	<4	<5	<41	24.6	<0.2	22	<3	<3	24.8
12.1	8.8	<5	<4	<5	<41	5	<0.2	<19	<3	<3	20.2

ATTACHMENT 5A

Rochem Environmental, Inc. - Progress Report

ROCHEM
ENVIRONMENTAL, INC.

P.O. Box 1299
4721 Garth Rd., Suite D
Baytown, Texas 77522

Phone: (713) 420-1408
Fax: (713) 420-1308

March 1, 1994

Mr. Mark Collins
French Limited Project
15010 F.M. 2100, Suite 200
Crosby, Texas 77532

Dear Mark:

We are submitting our report for the month February.

During the month, we treated 2,699,900 gallons of water. On contract we have 19,906,300 gallons to date.

All continues to go well. Pond water temperatures are still depressed resulting in lower permeate flow rates. We expect this to begin to improve in the upcoming months.

Sincerely,

Kenneth A. Miller
President

/plz

6.0 AMBIENT AIR MANAGEMENT

Ambient air quality management continued on an "as-needed" basis to protect the environment and human health.

6.1 Summary of Activities

Collected and analyzed three time-integrated personnel exposure samples; the measured levels of volatile organic compounds were well below the action levels.

Sampled the ambient air in all work areas several times per shift and on a random "spot-check" basis; there were no levels of volatile organic compounds which required response action.

6.2 Problems and Response Action

Response	Solution
Calibrate portable vapor meters.	Train operators to calibrate; refurbish all meters.
Sampling "hot" wells.	Require respirator use when sampling "hot" wells.
Ambient air quality in all work areas.	Check all work areas with portable meter several times per day.

6.3 Problems Resolved

None.

6.4 On-going Events/Activities

Measure ambient air quality in all work areas several times per day.

Conduct time-integrated sampling in all major work areas.

Require respiratory protection when sampling "hot" wells.

Conduct necessary air sampling and analyses to issue "burn" permits.

Closely monitor ambient air quality in the vicinity of new projects/activities.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

7.1 Summary of Activities

7.1.1 Sampling

One set of personal air monitoring samples was collected in February. The following is a summary of current routine and special air matrix code sample specifics:

MATRIX CODE	SAMPLE SPECIFICS
M01D	TF/SA at two locations
S01B	Tedlar © bag

TF = Tenax® front tube

TB = Tenax® back tube

CF = CMS front tube

CB = CMS back tube

SA = Tube analyzed separately

CA = TF and TB combined into one analysis

Table 7-1 is a summary of the air, soil and water samples collected for the month of February:

TABLE 7-1

Monthly Sampling Summary

AIR SAMPLING:

Matrix Description/ (Code)	Tubes Analyzed	Analysis Parameters	QC Level
Personal Air (M01D)	2	TO-1	II
	2	TO-2	II
Special Air (S01B)	4	TO-1	I
		TO-2	I

TABLE 7-1 (Continued)

Monthly Sampling Summary

PROCESS AND TREATED WATER:

Matrix Description/ (Code)	Samples	Analysis Parameters	QC Level
Treated Water (M03A)	8	GFAA-TW, HG, ICP-TW,OILS, PCB, SV$TCL, TOC, TSS	II
Process Water (M06C)	5	K, NUTRIENTS,TDS,TOC,TOC-FLTG, TOX,VOA$TCL	I
Process Water (S16F)	15	TSS, VSS, TS	NONE
Potable Water (M08A),	1	CL,COLOR,CORROS, DW-GFAA,DW-ICP,FL,HERB, HG, NO3N,ODOR,PEST-TCL, SO4, SURFACTANT, SV$TCL, TDS, VOA$TCL	II

WELLS:

Well Nutrients	16	K, NO3N	I
Groundwater (S14D) [CMC-1, CMC-2, CMC-3]	3	VOA$TCL	I
Deep Wells (S14J) [S2-101, REI-3-4, REI-7]	3	VOA$TCL	I
Bounceback/Pulse Pump (S14L) [S1-033, S1-034, S1-036, S1-037, S1-023, S1-042]	6	VOA$TCL	I

TABLE 7-1 (Continued)

Monthly Sampling Summary

SOILS/SLUDGES:

Matrix Description/ (Code)	Tubes Analyzed	Analysis Parameters	QC Level
Riverdale Barrel Area (S19B) [8C, 8D, 9C, 9D, 8B]	5	ICP-AS, PCB, SV$TCL, VOA$TCL	II
Sikes Backfill Source (S19E) [Comp 1, Comp 2, Comp 3, Comp 4]	4	TAL Metals, PCB, SV$TCL, VOA$TCL	II
SPECIAL SAMPLES:			
Demobilization Rinsate (S17H)	1	GFAA-TW, HG, ICP-TW, OILS, PCB, SV$TCL, TOC, TSS, VOA$TCL	II

7.1.2 Data Validation Activities Summary

7.1.2.1 Treated Water Samples

Data validation has been completed for sample sets M03A0193, M03A0194, M03A0195, M03A0196, M03A0197, and M03A0198, M03A0199, M03A0200, M03A0201 and M03A0202. These treated water samples were collected between December 16, 1993 and January 20, 1994.

7.1.2.2 Groundwater Samples

Data validation (VSDS processing and QC review) has been completed for all parameters on 54 of the 92 wells sampled in December for 1993 annual groundwater monitoring. Data for the remaining 38 wells have either not been fully VSDS processed or have not been received from the laboratory. VSDS processing has also been completed for groundwater set (S14L0014). This sample set contains data from the contaminant bounceback program. These samples are all QC Level I VOA only.

7.1.2.3 Lagoon Subsoil Samples

There was no Lagoon Subsoil data processed or QA reviewed this month.

7.1.2.4 Other Samples

No special or spill sample sets have been submitted during this reporting period.

7.2 Data Validation QC Summary and Discussion

7.2.1 Level I and Level II QC Philosophy

The Quality Assurance Project Plan (QAPP) defines data validity in terms of procedural requirements which must be followed for data comparability, and numerical data quality objectives which must be met to assure precision and accuracy of the results. Precision, accuracy and completeness are the numerical Data Quality Objectives (DQOs) established for the French Project by the QAPP. The intent of the data validation process is to verify that the documentation and quality control data provided by the laboratory properly substantiate the required data quality.

The revised QAPP describes both a manual data validation process using checklists and hardcopy QC reports submitted with sample results, and a computerized data validation procedure utilizing digital sample results and QC reports. The operations phase began with

manual data validation, changed to a combination of manual and computerized data validation and has now switched over completely to computerized data reporting/validation.

For purposes of data validation procedures, the QAPP defines two QC levels: Level I and Level II. Level I data validation is specified for process control and progress monitoring sample data validation and Level II data validation is specified for remediation verification sample results.

7.2.2 QA Issues

"Additional Clarification of Corrective Action for Relative Retention Time (RRT) QC Test Failures" memo was written in response to numerous Calibration Standards RRT and Peak No. check failures found for recent treated water sample sets. Most notably, the VSDS has been modified to include instrument-specific RRTs and the project corrective action has been expanded to include the consideration of the compound m/e when evaluating these failures.

7.2.3 Treated Water Samples QC Summary

7.2.3.1 Volatile Organic Analyses (VOA)

There were no failures in volatile organics data for the month of February.

7.2.3.2 Semivolatile Organics Analysis (SVA)

The hard-to-chromatogram compounds (phenols, ethers and amines) continue to fail RRT checks in ICALs and CCALs, but additional data evaluation as prescribed in the QAPP and in "Additional Clarification of Corrective Action for Relative Retention Time (RRT) QC Test Failures" memo show the compounds to be assigned correctly. These compounds always pass the Peak Number test. The RRT failures are due to the fact that RTs for these compounds vary greatly with the condition (i.e., activity) of the column.

M03A0195 and M03A0195-MSD failed the SU recovery test for SU3 and SU6, indicating a matrix effect. No corrective action is required.

M03A0196 and the associated MSD failed the SU recovery test for SU3, indicating a matrix effect. No corrective action is required.

7.2.3.3 PCB Analysis

There were no failures in PCB data for the month of February.

7.2.3.4 Metals Analysis

Lead failed the prep blank test in all samples validated this month due to the laboratory's reporting of method detection limits (MDL) higher than project analytical detection limits (ADL). The ADL was previously set at 20 µg/l. Blank detection limits of 34 ug/l are well below surface water discharge limits of 63 ug/l for lead and do not affect data quality. The ADL for the lead was raised to 45 ug/l which is adequate to verify the discharge limit. If the MDL reaches 45 ug/l the analysis method will be changed from ICP to graphite furnace (GFAA) to achieve the lower ADL. The same problem exists for silver with the MDL now being reported at 4 ug/l (the value has been at 3 ug/l since the project began) which is the maximum discharge limit. The ADL cannot be raised for silver. The laboratory has been requested to perform treated water silver analyses by GFAA until further notice.

Two samples, M03A0194 and M03A0202, failed the furnace analytical spike for Arsenic. MSA was not used due to low absorbance. The LCS passed and a matrix effect is indicated. No corrective action is required.

Three samples, M03A0195, M03A0197, and M03A0198, failed the furnace analytical spike for Arsenic. MSA was used with an acceptable coefficient. Data quality is not affected.

Selenium fails the furnace analytical spike in 50% of the samples. In all cases MSA was not performed due to low absorbance. The LCS passed and a matrix effect is indicated. No corrective action is required.

Selenium fails the spike recovery test in 50% of samples. In all cases the LCS passed, indicating a matrix effect. No corrective action is required.

Arsenic fails the spike recovery test in M03A0193 and M03A0198. The LCS passes, indicating a matrix effect. No corrective action is required.

7.2.3.5 Completeness Summaries

Tables 7-2 through 7-6 summarize completeness values for VOA, SVA, PCBs, Metals and miscellaneous parameters on treated water samples.

<u>VOA (Table 7-2)</u>

A total of 10 VOA sample sets have been validated with all samples meeting data quality objectives. Project Completeness Goals are met or exceeded for all categories with the exception of Project to Date (PTD) IS/SU Corrective Action at 89%. This low value is a vestige of initially low Corrective Action completeness for VOA analytical data in early 1992. Total 1993 completeness values for Corrective Action are at 96 %.

SVA (Table 7-3)

A total of 10 SVA sample sets have been validated for this time period. All categories meet or exceed Project Completeness Goals with the exception of Project to Date (PTD) IS/SU Corrective Action at 88% completeness. This low value is a vestige of initially low Corrective Action completeness for analytical data in early 1992. Total 1993 completeness values for Corrective Action are at 100 %.

PCBs (Table 7-4)

A total of 10 PCB sample sets have been validated for this time period with all samples, meeting data quality objectives. All categories meet or exceed Project Completeness Goals.

Metals (Table 7-5)

A total of 10 sample sets have been validated for this time period. Project Completeness Goals are met or exceeded in all categories with the exception of those listed in Table 7-5 and discussed in the previous section.

Miscellaneous Parameters (Table 7-6)

A total of 10 sample sets have been validated for this time period. Project completeness goals are met or exceeded in all categories.

TABLE 7-2

Completeness Summary
M03 TREATED WATER
Volatile Organics Analyses

SAMPLE DATE SET NUMBER	M03A0193 through M03A0202	Total 1993 to Date	Project to Date	PROJECT GOAL
Analysis Holding Time	100	100	100	100
12 Hour Window	100	100	100	100
SU Check	100	98	92	90
SU1 (d4-1,2-DCE)	100	98	96	90
SU2 (d8-Toluene)	100	100	97	90
SU3 (4-BFB)	100	100	99	90
IS Check	100	100	100	90
IS1 (BrClMethane)	100	100	100	90
IS2 (1,4-DiFlBenzene)	100	100	100	90
IS3(d5-ClBenzene)	100	100	100	90
Sample RT/RRT Check	100	*	*	
Vinyl Chloride				
Accuracy	100	100	99	90
Precision	100	100	99	90
Benzene				
Accuracy	100	97	99	90
Precision	100	100	100	90
No Group Matrix Effect	100	*	*	90
No Sample Matrix Effect	100	*	*	90
Tune Check	100	*	*	
Overall ICAL Check	100	*	*	
Overall CCAL Check	100	*	*	
Overall Lab Blank Check	100	*	*	

* Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD and total 1993 Completeness values do not apply to these checks.

TABLE 7-3

Completeness Summary
M03A Treated Water
Semivolatile Organic Analyses

SAMPLE DATE SET NUMBER	M03A0193 through M03A0202	Total 1993 to Date	Project to Date	PROJECT GOAL
Extract Holding Time	100	100	100	100
Analysis Holding Time	100	100	100	100
12 Hour Window	100	100	100	100
SU Check	**83**	**97**	**94**	**90**
SU1 (2-FlPhenol)	100	99	94	90
SU2 (d5-Phenol)	100	92	92	90
SU3 (d5-Nitrobenz)	77	98	97	90
SU4(2-FlBiphenyl)	100	100	99	90
SU5(2,4,6-TBPh)	100	99	95	90
SU6(d14-Terphen)	88	98	96	90
IS Check	**100**	**100**	**95**	**90**
IS1 (d4-1,4-DiClBenz)	100	100	100	90
IS2 (d8-Naph)	100	100	100	90
IS3 (d10-Acenaph)	100	100	100	90
IS4 (d10-Phenanth)	100	100	99	90
IS5 (d12-Chrysene)	100	100	97	90
IS6 (d12-Perylene)	100	100	95	90
Sample RT/RRT	100	*	*	*
Napthalene				
Accuracy	100	100	100	90
Precision	100	99	99	90
No Group Matrix Effect	100	100	100	90
No Sample Matrix Effect	100	99	91	90
Tune Check	100	*	*	*
Overall ICAL Check	100	*	*	*
Overall CCAL Check	100	*	*	*
Overall Lab Blank Check	90	*	*	*

* Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD and total 1993 Completeness values do not apply to these checks.

TABLE 7-4

Completeness Summary
M03A Treated Water
PCB Analyses

SAMPLE DATE SET NUMBER	M03A0193 through M03A0202	Total 1993 to Date	Project to Date	PROJECT GOAL
Extract Holding Time	100	100	100	100
Analysis Holding Time	100	100	100	100
12 Hour Window	100	100	100	100
SU Check - Column A	100	100	100	90
SU1 (DCBP)	100	81	81	NS
SU2 (TCMX)	100	100	97	NS
SU Check - Column B	100	100	99	90
SU1 (DCBP)	100	82	82	NS
SU2 (TCMX)	100	99	99	NS
SU Check - Column A or B	100	100	99	90
Aroclor 1242				
Accuracy	100	100	96	90
Precision	100	100	96	90
Overall ICAL Check	100	*	*	
Overall 1st CCAL Check	100	*	*	
Overall 2nd CCAL Check	100	*	*	
Overall Lab Blank Check	100	*	*	

* Level II QC checks were performed on 10% of samples prior to 6/14/93. PTD and total 1993 Completeness values do not apply to these checks.

TABLE 7-5

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0193 through M03A0202	PROJECT GOAL
ANALYTE: BARIUM		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: CADMIUM		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: CHROMIUM		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: COPPER		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: LEAD		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-5 (Continued)

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0193 through M03A0202	PROJECT GOAL
ANALYTE: MANGANESE		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	NA	100
Lab Control Spike Check	100	100
ANALYTE: NICKEL		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: SILVER		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: ZINC		
MS Accuracy	100	95
DUP Precision/Difference	100	95
No Matrix Interference*	100	NA
Prep Blank Check	NA	100
Lab Control Spike Check	100	100
ANALYTE: MERCURY		
MS Accuracy	100	95
DUP Precision/Difference	W	95
No Matrix Interference*	100	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-5 (Continued)

Completeness Summary
M03A Treated Water
Metals Analyses

SAMPLE DATE SET NUMBER	M03A0186 through M03A0192	PROJECT GOAL
ANALYTE:ARSENIC		
MS Accuracy	80	95
DUP Precision/Difference	100	95
No Matrix Interference*	80	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100
ANALYTE: SELENIUM		
MS Accuracy	50	95
DUP Precision/Difference	100	95
No Matrix Interference*	50	NA
Prep Blank Check	100	100
Lab Control Spike Check	100	100

W - All samples waived due to low response

* Matrix interference is indicated by:
Furnace analyses - failure of analytical spike or low MSA coefficient
ICP analyses - failure of serial dilution

TABLE 7-6

Completeness Summary
M03A Treated Water
Miscellaneous Parameters Analyses

SAMPLE DATE SET NUMBER	M03A0186 through M03A0192	Total 1993 to Date	Project to Date	PROJECT GOAL
PARAMETER: TOC				
Analysis Hold Time	100	100	100	100
MS Accuracy	100	100	100	NA
DUP Precision	100	100	100	NA
PARAMETER: OILS				
Analysis Hold Time	100	100	100	100
MS Accuracy	100	100	100	NA
DUP Precision	100	100	100	NA
PARAMETER: TSS				
Analysis Hold Time	90	99	100	100
MS Accuracy	NA	NA	NA	NA
DUP Precision	100	100	100	NA

7.2.4 Groundwater Samples QC Summary

Data validation was completed for groundwater annual monitoring data sets (M04A0009, M04B0009, M04D0009, M04D0010, M04D0011 and M04D0012). QC failures found for all 1993 annual groundwater monitoring data are summarized in Tables 7-7 and 7-8. Completeness values will be calculated when data validation has been completed for all 92 wells.

7.2.4.1 Volatile Organic Analyses (VOA)

Of the 92 wells sampled, part are considered to be progress monitoring wells and part are considered to be verification or perimeter wells. Progress monitoring wells are QC Level I while verfication wells are required to be QC Level II. For VOA data validation purposes, any set containing at least one VOA sample which did not require dilution is considered QC Level II. One QC failure was found for QC Level II data. Sample M04B0012-02 was rerun after the original analysis failed surrogate recovery. The rerun passed surrogate recovery but failed the analysis holding time check. Both the laboratory invoice and results were rejected for this sample as it cannot be used for QC Level II verification. All other QC failures found are for QC Level I data which requires no laboratory corrective action. In each case the data was flagged as failing QC.

7.2.4.2 Miscellaneous Parameters

For Misc Parameter data validation purposes, all sets are considered QC Level I since there are no cleanup criteria for any of these parameters. Several holding time failures were found for Total Organic Halides (TOX) and Total Dissolved Solids (TDS). In each case, the laboratory invoice was rejected and the results flagged. Other failures found were for precision or accuracy. In each case, all sample results were flagged as failing QC.

TABLE 7-7

Sample Failure Summary
1993 Annual Groundwater Monitoring
Volatile Organics Analyses

Sample Date	Sample Location	Sample Number	QC Level*	QC Failure/ Mode	Explanation	Corrective Action
12/16/93	ERT-008	M04A0008-01 DL	I	SU2	recovery 12% high, only acetone rep. amt affected	none required, data flagged
12/16/93	S1-015 S1-012	M04B0010-01 M04B0010-01 DL M04B0010-02 M04B0010-02 DL	I	SU1	low recovery	none required, data flagged
12/17/93	S1-118	M04B0012-02	II	Analysis HT	analyzed 4 days past HT	invoice and data rejected
01/04/94	ERT-033	M04A0009-01 MS M04A0009-01 MSD	I I	Analysis HT	analyzed 3 days past HT	data flagged
01/04/94	INT-131 INT-303 S1-126 S1-305	M04A0009-03 M04A0009-03 DL M04A0009-04 M04A0009-04 DL M04A0009-05 M04A0009-05 DL M04A0009-06 M04A0009-06 DL	I	SU1	SU1 High for both original run and dilution	none required, data flagged
12/28/93	ALL	M04D0012	I	Calib. RRT	potential mis-identification in calibration	confirm peak assignments, review raw data tapes

* If any VOA in set did not require dilution, QC Level is II. Otherwise, QC Level is I.

TABLE 7-8

Sample Failure Summary
1993 Annual Groundwater Monitoring
Miscellaneous Parameters Analyses

Sample Date	Sample Location	Sample Number	QC Level	QC Failure/ Mode	Explanation	Corrective Action
TOX						
12/16/93	ERT-008	M04A0008-01	I	Analysis HT	6 days past HT	reject invoice
12/16/93	S1-015	M04B0010-01	I	Analysis HT	6 days past HT	reject invoice
12/16/93	S1-012	M04B0010-02	I	Analysis HT	6 days past HT	reject invoice
12/16/93	S1-117	M04B0011-01	I	Analysis HT	13 days past HT	reject invoice
12/16/93	INT-116	M04B0011-02	I	Analysis HT	13 days past HT	reject invoice
12/16/93	INT-117	M04B0011-03	I	Analysis HT	13 days past HT	reject invoice
12/17/93	REI-3-4	M04B0012-01	I	Analysis HT	18 days past HT	reject invoice
12/17/93	S1-118	M04B0012-02	I	Analysis HT	18 days past HT	reject invoice
12/17/93	INT-118	M04B0012-03	I	Analysis HT	18 days past HT	reject invoice
12/17/93	REI-7	M04B0012-04	I	Analysis HT	18 days past HT	reject invoice
12/17/93	REI-11	M04B0012-05	I	Analysis HT	18 days past HT	reject invoice
12/17/93	S2-101	M04B0012-06	I	Analysis HT	18 days past HT	reject invoice
01/04/94	ERT-033	M04A0009-01	I	Analysis HT	13 days past HT	reject invoice
01/04/94	INT-131	M04A0009-03	I	Analysis HT	13 days past HT	reject invoice
01/04/94	INT-303	M04A0009-04	I	Analysis HT	13 days past HT	reject invoice
01/04/94	S1-126	M04A0009-05	I	Analysis HT	13 days past HT	reject invoice
01/04/94	S1-305	M04A0009-06	I	Analysis HT	13 days past HT	reject invoice
12/28/93	ALL	M04D0012	I	Analysis HT	9 days past HT	reject invoice
12/21/93	ALL	M04D0011	I	Analysis HT	15 days past HT	reject invoice
12/20/93	ALL	M04D0010	I	Analysis HT	15 days past HT	reject invoice
12/15/93	ALL	M04D0009	I	Analysis HT	15 days past HT	reject invoice
TOC FLTG						
12/16/93	S1-117, INT-116/7	M04B0011-01	I	Dup Prec	high RPD	data flagged
TDS						
12/16/93	S1-117, INT-116/7	M04B0011-01	I	Dup Prec	high RPD	data flagged
12/20/93	ALL	M04D0010	I	Analysis HT	15 days past HT	reject invoice
IC						
12/17/93	REI34/7/11, S1-118, S2-101, INT-118	M04B0012-01	I	MS Accuracy	recovery low	data flagged
OP-P						
12/28/93	ALL	M04D0012	I	Analysis HT	1 day past HT	reject invoice

*All sets QC Level I.

8.0 SITE MAINTENANCE

8.1 Summary of Activities

8.1.1 General Housekeeping

The site safety and housekeeping inspections and responses kept grounds safe and attractive for employees and visitors. The entire project was inspected twice per week, with written inspection reports issued and appropriate corrective action taken.

8.1.2 Purchasing

All purchases were covered by written requisitions and purchase orders. Purchase of chemicals is now reduced to groundwater treatment and insitu remediation. On February 7 an on-site pre-bid conference was conducted for 95% pebblized lime for stabilization of Cell E sludge.

8.1.3 Equipment Maintenance

Routine preventive and production maintenance was performed on all equipment. There were no emergency maintenance jobs.

8.2 Visitors

The following visitors were recorded at the site during February:

February 1: Don Cruver, Hill International

February 4: Wayne Stakstill, Gulf Electronquip

February 7:	Craig Girard, Chemlime Tony Santana, Austin While Lime Darla Teston, Austin White Lime Jim Counts, APG Lime
February 8:	Rashalee Levine, U.S. DOE Erica C. Jonlin, BDM Federal
February 9:	Buddy Spretz, American Ecology
February 10:	(b) (6) ocal resident local resident
February 17:	Fritz A. Zuhl, FAZ Mkt. & Tech. David LaMonica, Rochem Tom Tremblay, ERI Art Royals, ERI
February 23:	(b) (6) Ind. Joe Credeur, SPL
February 24:	Fay Oake, TNRCC Owen Joywol, DMU
February 25:	Jeff Briston, Terra Technologies T. Mondefioh, Terra Technologies Loretta Anderson, Anderson Ent.

8.3 Emergency Equipment

8.3.1 Flood Gate Test

The exclusion wall gate was closed on February 24, 1994 with a good seal noted and recorded.

8.3.2 P-8 Auxiliary Pump

P-8 Auxiliary Pump was exercised on February 8, 1994.

8.3.3 Fire Extinguishers

All fire extinguishers were inspected and certified.

8.4 Security

Smith Security provides 24-hour security at the FLTG site, including the south side of Gulf Pump Road; all site areas are checked hourly. There were no security incidents recorded in February.

8.5 Operator Training

Semi-annual physicals are scheduled through this month. All training is documented and records are maintained on site.

8.6 Data Management

Data base programming is fully operational. Data is entered on a daily basis.

8.7 Personnel Monitoring

Results of personnel monitoring conducted during February are included in Table 8-1.

8.8 OVM System

The Ambient Air System, Tenax® A and C included, were taken out of service in December. The meteorological station remains operational.

8.9 Repository

Records from the February review are listed in Attachment 8A.

TABLE 8-1

On-Site Employee Contaminant Limits
(From OSHA 29 CFR 1910 Subpart Z)

Compound	PEL 8 hour PPM	M01D0037 15-Feb-94 Inside Wall		M01D0037 15-Feb-94 Outside Wall	
		% of PEL	PPM	% of PEL	PPM
Chloromethane	50	0.000	0.000	0.000	0.000
Bromomethane	5	0.000	0.000	0.000	0.000
Vinyl chloride	1	0.000	0.000	0.000	0.000
Chloroethane	1000	0.000	0.000	0.000	0.000
Dichloromethane	50	0.000	0.000	0.003	0.002
Acetone	750	0.002	0.017	0.000	0.000
Carbon disulfide	10	0.000	0.000	0.006	0.001
1,1-Dichloroethene	5	0.000	0.000	0.000	0.000
1,1-Dichloroethane	100	0.000	0.000	0.002	0.002
trans-1,2-Dichloroethene	200	0.000	0.000	0.001	0.003
Chloroform	10	0.027	0.003	0.345	0.035
1,2-Dichloroethane	10	0.017	0.002	0.089	0.009
2-Butanone	200	0.034	0.068	0.000	0.000
1,1,1-Trichloroethane	350	0.000	0.001	0.000	0.001
Carbon Tetrachloride	5	0.012	0.001	0.080	0.004
Vinyl acetate	10	0.000	0.000	0.000	0.000
Bromodichloromethane			0.000		0.000
1,2-Dichloropropane	75	0.001	0.001	0.000	0.000
cis-1,3-Dichloropropene	1	0.000	0.000	0.000	0.000
Trichloroethene	50	0.000	0.000	0.007	0.003
Dibromochloromethane			0.000		0.000
1,1,2-Trichloroethane	10	0.000	0.000	0.000	0.000
Benzene	1	0.227	0.002	0.418	0.004
trans-1,3-Dichloropropen	1	0.000	0.000	0.000	0.000
2-Chloroethylvinyl ether			0.000		0.000
Bromoform	0.5	0.000	0.000	0.000	0.000
4-Methyl-2-pentanone	50	0.000	0.000	0.000	0.000
2-Hexanone	5	0.000	0.000	0.000	0.000
Tetrachloroethene	50	0.000	0.000	0.008	0.004
1,1,2,2-Tetrachloroethane	1	0.000	0.000	0.000	0.000
Toluene	100	0.003	0.003	0.013	0.013
Chlorobenzene	10	0.000	0.000	0.000	0.000
Ethylbenzene	100	0.000	0.000	0.002	0.002
Styrene	50	0.000	0.000	0.000	0.000
Xylene (total)	100	0.000	0.000	0.012	0.012
Hexane			0.003		0.043

ATTACHMENT 8A

Repository Status Report: February, 1994

REPOSITORY STATUS REPORT: FEBRUARY, 1994

At the Rice University Library...

1. Remedial Investigation Report April, 1985

2. Remedial Investigation Report June, 1986 (Updated from April, 1985)

3. Remedial Investigation Report Volume I, April, 1985

4. Remedial Investigation Report Appendices, Volume I, February, 1986 (Revised June, 86)

5. Remedial Investigation Report Appendices, Volume II, April, 1985

6. Remedial Investigation Report Appendices, Volume II, February, 1986 (Revised June, 1986)

7. Remedial Investigation Report Appendices, Volume III, February, 1986

8. 1986 Field Investigation Hydrology Report, December 19, 1986

9. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume I, December, 1986

10. 1986 Field Investigation and Supplemental Remedial Investigation Report French Limited Site Volume II, Appendices December, 1986

11. Feasibility Study Report, March 1987

12. Feasibility Study Report, March 1987, Executive Summary
    P. ii-iv Missing
    P. ix-xiv Missing
    Pages 1-5 thru 1-13 Missing
    No Appendix F - Component Description and Costing Information
    (Only Appendix D with Numbered Pages)

13. French Limited Site Focused Feasibility Study (May 1987)

14. Endangerment Assessment Report February, 1987

15. Endangerment Assessment Report April 1987 (Updated from February, 1987)

16. Public Health Assessment for French Limited March 30, 1993 from U.S. Department of Health and Human Services

17. Proposed In Situ Biodegradation Demonstration French Limited Site Phase III, April, 1987

18. In Situ Biodegradation Demonstration Report Volume I Executive Summary, October 30, 1987
    - Table's Not Page Numbered
    - Section 1 Pages 1-1 Missing
    - Section 2 Pages 2-1 Missing
    - Section 3, Two Pages 3-1 with First Page Crossed Out
    - Section 3, Page 3.5 Shaping the Dike Before Air Sparger Installation Missing
    - Section 4, Two Pages 4-12 with First Page Crossed Out
    - Section 4, Page 4-3 is Missing
    - Section 5, Two Pages 5-31 with First Page Crossed Out
    - Section 5, Two Figure 5-4 with First Page Crossed Out
    - Section 7, Two Pages 7-6 with First Page Crossed Out and Second Page with Correction Written in Second to Last Paragraph
    - Section 8, Two Pages 8-1 with First Page Crossed Out
    - Section 8, Two Pages 8-3 with First Page Crossed Out
    - Section 9, Two Pages 9-7 with First Page Crossed Out
    - Section 10, Two Pages 10-3 with First Page Crossed Out
    - Section 10, Two Pages 10-7 with First Page Crossed Out
    - Section 10, Two Pages 10-9 with First Page Crossed Out

19. In Situ Biodegradation Demonstration Report Volume II, October 30, 1987 (Revised February 1, 1988 at Site only)

20. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume I, November 30, 1987

21. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume II, November 30, 1987 + Appendices

22. In Situ Biodegradation Demonstration French Limited May/June 1988 Monthly Report, Equipment Evaluation Phase IV

23. In Situ Bioremediation Demonstration French Limited July, 1988 Monthly Report, Equipment Evaluation Phase IV

24. In Situ Biodegradation Demonstration Supplemental Report French Limited Site, Volume IV November 30, 1987 + Appendices

25. Summary of Remedial Alternative Selection 1988

26. Declaration for the Record of Decision 1988

27. Results of the French Limited Task Group Survey (Goldman and Company) April, 1987

28. Goldman Public Relations Clipping Report

29. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (5-21-87)

30. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (2-11-88) (Updated from June 21, 1987)

31. Consent Decree between the Federal Government and the FLTG

32. French Limited Superfund Site Community Relations Revised Plan August, 1989 - Jacob's Engineering

33. Laboratory Evaluation of Biodegradation at the French Limited Site

34. Field Evaluation of Biodegradation at the French Limited Site (Phase II) Volume I

35. Bioremediation Facilities Design Report Volume II of IV Appendices, Reports and Calculations (March 20, 1991)

36. Bioremediation Facilities Design Report Volume III of IV Appendix E - Design Specifications (March 20, 1991)

37. Bioremediation Facilities Design Report Volume IV of IV - Air Monitoring, March 20, 1991
    Section 3.0 Page 3-7 Missing

38. Remedial Action Plan Volume I - April, 1990
    1-2-24 Missing Phase 1B
    Shallow Subsoil Boring Locations
    1-2-50 Plate 1 Missing

39. Remedial Action Plan Volume I - September, 1990 (Updated from April, 1990)
    I-E 2-2 Missing from Appendix E (Removed from Site to Copy)

40. Remedial Action Plan Volume II Quality Assurance April, 1990

41. Remedial Action Plan Volume II Quality Assurance September, 1990 (Updated from April 1990) Revised June 3, 1991

42. Remedial Action Plan Volume II Quality Assurance June, 1990
Appendix A - Quality Assurance Sampling Procedures and
Appendix B - Analytical Methods - B.1 - B.53, September 22, 1989
Revised September 28, 1990

43. Remedial Action Plan Volume III - Health and Safety, July 20, 1990
Contents Start at Page 17 of 28
Pages 21 and 22 of 28 Missing in Contents

44. Remedial Action Plan Volume IV - Spill and Volatile Organic Release Contingency Plan (April 6, 1990)

45. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, May, 1990
Page v.i.3 Missing
Section 7.0 Page 1 of 17 Mismarked (11)
Section C, Page between 5 and 6 Blank

46. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, July 20, 1990, (Updated from May, 1990)

47. Hydrogeologic Characterization Report, March 1989

48. Hydrogeologic Characterization Report - Appendices, March 1989

49. December, 1987 French Limited Monthly Report Equipment Evaluation Phase IV

50. January, 1988 Monthly Report Equipment Evaluation Phase IV

51. Supplemental Biodegradation Equipment Evaluation French Limited Site - Phase IV, September 26, 1988

52. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume I, February 1,1990

53. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume II, February 1, 1990

54. Site Safety and Health Plan French Limited Site - Phase III, April 1987 (Revision 2)

55. San Jacinto River May 19, 1989 Flood Event Report, June 1989

56. Post San Jacinto River May 1989 Flood Event Soils and Water Analysis Program - Volume I, August 16, 1989

57. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume II Appendix A

58. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume III Appendix A, August 16, 1989

59. 1988 Slough Investigation Report French Limited Site, October 1988 (2 Copies)

60. Flood and Migration Control Wall Design Report, August 16, 1989

61. Flood and Migration Control Wall Design Report Appendix C - Access way Design September 1989 - (Incorrect Spelling of Flood on Cover)

62. Flood and Migration Control Wall Design Report Appendix C Access Way Design, September, 1989

63. Installation Report for Flood and Migration Control Wall, January 8, 1990

64. Installation Report for Flood and Migration Control Wall Appendix A - ENSR Site Logs

65. Installation Report for Flood and Migration Control Wall Appendix B - Inspection Reports

66. Installation Report for Flood and Migration Control Wall
Appendix C - Pile Driving Inspection Report January 8, 1990

67. Flood Wall Gate Test Report French Limited Site, February 1990

68. North Pit Remediation Report French Limited Site, November 6, 1989
Figures 2-6 and 2-7 Transposed

69. Workplan for the Shallow Aquifer Pumping Tests for the French Limited Site, July 22, 1988 (2 Copies)
Extra Page (Map) Between Pages 6 and 7
Page 80 Missing

70. French Limited Site Hurricane Gilbert Preparation Report, October, 1988

71. Riverdale Lake Area Remediation Program August 15, 1989

72. In Situ Biodegradation Demonstration Phase III Quality Assurance Project Plan for French Limited Site, March, 1987

73. Addendum to Quality Assurance Project Plan for the French Limited Site In Situ Biodegradation Demonstration Phase III, February 16, 1990
Instruction 1 and 2.1 Missing Appendix A - Driller's Log
Table 2, Appendix A

74. Potable Water Well Installation Report French Limited Site, December 7, 1988

75. Bioresidue Fixation Alternatives Evaluation Report French Limited Site March 20, 1989

76. Ambient Air Impact Risk Assessment Report, May 5, 1989

77. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume I of III - Summary Report and Appendices A-H, July 1991

78. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume II of III - Appendices I-M, June 1991

79. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume III of III - Appendices N-P, June 1991

80. French Limited Remediation Design Report -
Executive Summary Bioremediation/Shallow Aquifer, July, 1991

81. January 1992 Monthly Progress Report February 4

January 1992 Monthly Progress Report Appendices A, B, C,

January 1992 Monthly Progress Report Appendices E, F

January 1992 Monthly Progress Report Appendices G

82. February 1992 Monthly Progress Report

February 1992 Monthly Progress Report Appendices A, B,

February 1992 Monthly Progress Report Appendices C 1 and C 2

February 1992 Monthly Progress Report Appendices D, E

83. July 1992 Monthly Progress Report with Appendices A, B

84. December 1992 Monthly Progress Report

December 1992 Monthly Progress Report and Appendices A, B

87. March 1993 Monthly Progress Report

88. April 1993 Monthly Progress Report

89. Black EPA Binder

At the Crosby library...

2. Remedial Investigation Report - June, 1986
12-1 and 12-2 Not in Table of Contents

3. Remedial Investigation Volume I - Appendices 4-85

4. Remedial Investigation Appendices Volume I June, 1986 Revised from Feb. 1986
Page J-7 to J-14 Missing
Resource E Tabs Analytical Report Worksheet, Page 6 Missing

5. Remedial Investigation Volume II - Appendices 4-85

6. Remedial Investigation Appendices Volume II June, 1986 Revised from Feb. 1986
Tab 6, Soil Boring Logs B-12, B-13, B-15, B-16, B-17, B-31, B-32 Missing

7. Remedial Investigation Appendices Volume III February, 1986
Pages 1 and 2 of 10 Res. Engr Tab Missing
Analytical Report Worksheet 7-8-9-10 Missing
Pages 1 and 2 of 6 Missing
Tab 9 H 1-8 Missing, H 11-19 Missing, Page 1 of 10 Missing,
Page 3 Worksheet Missing
Tab 10 H 1-3 Missing, Page 3-6 of 6 Missing, Page 1-6 Missing
Tab 12 Page 2-10 of 10 Missing

8. 1986 Field Investigation Hydrology Report, December 19, 1986

9. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume I, December, 1986

10. 1986 Field Investigation and Supplemental Remedial Investigation Report Volume II, Appendices, December 1986

11. Feasibility Study Report, March 1987 (2 Copies)

13. French Limited Site Focused Feasibility Study, May 1987, Page 45 Missing

14. Endangerment Assessment Report February 1987 (2 copies)

15. Endangerment Assessment Report April 1987 (2 copies)

16. Public Health Assessment Addendum - March 30, 1993
    Missing Page 27 and 31

18. In Situ Biodegradation Demonstration Report Volume I Executive Summary October, 1987 (Revised 12-15-87)

19. In Situ Biodegradation Demonstration Report Volume II October 30, 1987

20. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume I, November 30, 1987
    Missing Supplements to 5-6 and 7 to 10

21. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume II, November 30, 1987 + Appendices
    Sample SB-9 N/A No Present or Sample Schedules,

23. In Situ Biodegradation Demonstration French Limited Monthly Report for July, 1988

24. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume IV, November 30, 1987 + Appendices

27. Results of the French Limited Task Group Survey (Goldman and Company) April 1987

28. Goldman Public Relations Clipping Report

30. Record of Public Meeting Regarding Remedial Investigation and Feasibility Study (February 11, 1988) (Additional Title - Record of Public Meeting to Discuss and Accept Public Comments on the Proposed Remedy for French Limited Site)

31. Consent Decree between the Federal Government and the FLTG (2 Copies)

33. Laboratory Evaluation of Biodegradation at the French Limited Site, December 1986.

34. Field Evaluation of Biodegradation at the French Limited Site (Phase II) Volume I, March, 1987

35. Bioremediation Facilities Design Report Volume II of IV Appendices, Reports and Calculations March 20, 1991

36. Bioremediation Facilities Design Report Volume III of IV Appendix E - Design Specifications March 20, 1991

37. Bioremediation Facilities Design Report Volume IV of IV Air Monitoring, March 20, 1991

39. Remedial Action Plan Volume I September 28, 1990
    E2-2 Missing

41. Remedial Action Plan Volume II - Quality Assurance, Revised June 3, 1991

42. Remedial Action Plan Volume II - Appendix A - Quality Assurance Sampling Procedures and Appendix B - Analytical Methods - B.1 - B.53, September 28, 1990
    Page 4 of 5 Missing

43. Remedial Action Plan Volume III - Health and Safety, July 20, 1990

46. Remedial Action Plan Volume V - Shallow Aquifer and Subsoil Remediation Process Design, July 20, 1990 (2 Copies)
    Table of Contents - Pages 21 and 22 Missing
    3.0 p 7-9 Missing

47. Hydrogeologic Characterization Report, March 1989

48. Hydrogeologic Characterization Report Appendices, March 1989

49. Equipment Evaluation Phase IV Report December, 1987
    Monthly Report

51. Supplemental Biodegradation Equipment Evaluation French Limited Site - Phase IV, September 26, 1988

52. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume I, February 1, 1990

53. 1988 Equipment Evaluation Phase IV Report French Limited Site: Volume II, February 1, 1990

54. Site Safety and Health Plan French Limited Site - Phase III, April 1987 (Revision 2)

55. San Jacinto River May 19, 1989 Flood Event Report, June 1989

56. Post San Jacinto River May 1989 Flood Event Soils and Water Analysis Program Volume I, August 16, 1989

57. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume II, Appendix A

58. Post San Jacinto River 1989 Flood Event Soil and Water Analysis Program Volume III, Appendix A, August 16, 1989

59. 1988 Slough Investigation Report French Limited Site, October 1988 (2 Copies)
Section 4.0 Page 1 is Correct but Plates on Following Pages 2, 3, 4, & 5, are Not Complete.

60. Flood and Migration Control Wall Design Report, August 16, 1989

61. Flood and Migration Control Wall Design Report (Flood is spelled incorrectly on Volume Cover) + Appendix C - Access way Design September 1989

63. Installation Report for Flood and Migration Control Wall January 8, 1990

64. Installation Report for Flood and Migration Control Wall
Appendix A - ENSR Site Logs

65. Installation Report for Flood and Migration Control Wall
Appendix B - Inspection Reports

66. Installation Report for Flood and Migration Control Wall
Appendix C - Pile Driving Inspection Report January 8, 1990

67. Flood Wall Gate Test Report French Limited Site, February 1990

68. North Pit Remediation Report French Limited Site, November 6, 1989

69. Workplan for the Shallow Aquifer Pumping Tests for the French Limited Site, July 22, 1988 (2 Copies)
(Additional Title - Pumping Test Program for Shallow Alluvial Aquifer Zone)
Pages 79-80 Missing

70. French Limited Site Hurricane Gilbert Preparation Report October, 1988

71. Riverdale Lake Area Remediation Program, August 15, 1989

73. Addendum to Quality Assurance Project Plan for the French Limited Site In Situ Biodegradation Demonstration Phase III, February 16, 1990

74. Potable Water Well Installation Report French Limited Site, December 7, 1988

75. Bioresidue Fixation Alternatives Evaluation Report French Limited Site March 20, 1989

76. Ambient Air Impact Risk Assessment Report, May 5, 1989

77. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume I of III - Summary Report and Appendices A-H, July 1991

78. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume II of III - Appendices I-M, June 1991

79. Shallow Aquifer and Subsoil Remediation Facilities Design Report Volume III of III - Appendices N-P, June 1991

80. French Ltd. Remediation Design Report Executive Summary
Bioremediation Shallow Aquifer July 1991

81. January 1992 Monthly Progress Report February 4

January 1992 Monthly Progress Report Appendices A-B-C

January 1992 Monthly Progress Report Appendix D

January 1992 Monthly Progress Report Appendices E-F

January 1992 Monthly Progress Report Appendix G

82. February 1992 Monthly Progress Report

February 1992 Monthly Progress Report Appendices A-B

February 1992 Monthly Progress Report Appendices C-1 and C-2

February 1992 Monthly Progress Report Appendices D-E

83. July 1992 Monthly Progress Report Appendices A-B

84. December 1992 Monthly Progress Report

December 1992 Monthly Progress Report Appendices A-B

85. January 1993 Monthly Progress Report

86. February 1993 Monthly Progress Report

87. March 1993 Monthly Progress Report

88. April 1993 Monthly Progress Report

90. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume III, November 30, 1987 + Appendices
Lab Report - Page 138 Missing
Pages 1280 to 1287 Missing (Missing at Site)

90a. In Situ Biodegradation Demonstration Supplemental Report French Limited Site Volume V + Appendices, November 30, 1987

90b. In Situ Biodegradation Demonstration French Limited Monthly Report for January, 1988 or January Monthly Report Equipment Evaluation Phase IV.

91. French Limited Administrative Records Index

92. ARCS Remedial Activities at Uncontrolled Hazardous Waste Sites in the Zone of Regions VI, VII, VIII

Volume I Cell 2 Remediation Verified Report FLTG

Volume II Cell 2 Remediation Verified Report FLTG

Volume III Cell 2 Remediation Verified Report FLTG

Volume IV Cell 2 Remediation Verified Report FLTG

Volume V Cell 2 Remediation Verified Report FLTG

Volume VI Cell 2 Remediation Verified Report FLTG

BROWN FOLDERS:

1. Administrative Record Index
   Administrative Record 2-28-84
   Technical Comments on Remediation Investigation Report 2-84
   Supplemental Investigation - Resource Engr. 1-84
   Administrative Record 3-9-84

2. Miscellaneous Small EPA Newsletters/Reports

3. Supplementary Investigative - Resource Engr. 5-84 (2 Copies)
   Administrative Record 8-31-84
   Technical and Regulatory concepts for In-Place Closure - Resource Engr. 9-84
   Administrative Record 10-29-84 - 1-22-85
   Region IV Environmental Protection Agency and Texas Department of Water Resources - Resource Engr. 2-85

4. Administrative Record 2-4-85

5. Administrative Record 4-8-85 - 11-26-85
   Deep Aquifer Technical Report 12-3-85
   Quality Assurance Program for FLTG Phase III
   1985 Field Service Report 1-86
   1985 Field Service Appendices 1-86
   Administrative Record 2-14-86 - 4-4-86

6. Administrative Record 4-1-86
   Remedial Investigation Report Appendices Volume II 4-86

7. Administrative Record 4-1-86

8. Administrative Record 5-8-86 - 5-12-86
   Remedial Investigation Report - Resource Engr. 6-86 (Duplicate)
   Administrative Record 6-1-86

   Laboratory Evaluation of Biodegradation at French Limited Site
   1986 Field Investigation French Limited Site 12-86
   Applied Hydrology Assc. Inc.
   Administrative Record 1-5-87
   Endangerment Assessment Report French Limited Site 2-87
   Texas Water Commission Feasibility Study Report 3-87

9. Administrative Report 3-11-87 - 3-25-87
Quality Assurance Project Plan for French Limited Site
In Situ Biodegradation Demonstration Phase II 3-87
Remedial Planning Activities at Selected Uncontrolled Hazardous Waste Sites
Zone II EPA
Administrative Report 4-1-87
Proposed In Situ Biodegradation Demonstration French Limited Site Phase III 4-87
Administrative Report 4-7-87

10. Administrative Report 4-15-87 - 5-I-87
French Limited Focused Feasibility Study, ERT 5-87
Administrative Report 5-21-87 - 7-2-87
Revised Field Evaluation of Biodegradation at French Limited Site Phase II Vol. I

11. Administrative Report 7-20-87 - 11-23-87
In Situ Biodegradation Demonstration Report Vol. I Executive Summary 10-87
French Limited Site Work Plan Vol. I Project Activities and Sample Plan -
Lockwood, Andrews and Newman, Inc.
Administrative Report Undated Documents 000122-000134

MICROFICHE FIELD REPORTS 1988

During the month of February, the status of both libraries has been reviewed and the above information found to be accurate.

9.0 WETLANDS RESTORATION

9.1 Summary of Activities and Progress

Secured agency approval for wetlands restoration options. Reviewed potential site identification and evaluation with the agency review committee.

Developed a short list of four sites which were acceptable to the agencies. Started detailed evaluation and comparison of the four high potential sites. The four sites are:

1. Barrett I
2. Wallisville Road
3. Brownwood
4. San Jacinto Monument

The detailed comparison of the four sites will include:

1. Archeological evaluation
2. Surface hydrology evaluation
3. Property availability
4. Final site ownership options
5. Conceptual design of field work
6. Wetlands generation/restoration costs
7. Site maintenance costs and requirements

Hired the necessary technical support to complete the detailed comparison of the four sites.

Eliminated the Barrett I site and the Wallisville Road site due to high construction cost and complicated land ownership status.

Reviewed project data, status, and issues with the agency review committee, and there were no unresolved issues.

9.2 Problem Areas and Solutions

There are no unresolved problem areas.

9.3 Problems Resolved

Agency agreement on four "best" sites.

Site ownership of Brownwood site and San Jacinto Monument site.

9.4 Deliverables Submitted

Phase I site identification and evaluation report.

Phase II site evaluation report.

9.5 Upcoming Events and Activities

Develop conceptual design and cost estimate for the two priority sites.

Determine site availability and cost.

Select preferred site.

Develop detailed design and cost estimate for the preferred site.